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Canada. Wartime Prices and Trade Board

A FAIR DAY'S OUTPUT

from

A FAIR DAY'S WORK

A Guide to Management of
Essential Civilian Industries
in Assessing, Diagnosing and
Eliminating Manpower Loss

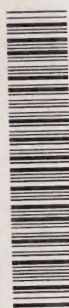


INDUSTRIAL DIVISION

WARTIME PRICES AND TRADE BOARD, OTTAWA

BULLETIN No. I.D. 100

JANUARY, 1945



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Foreword

THE production of essential civilian goods and services must not be allowed to sink below the minimum levels required in the national interest. To maintain the quantity and quality of manpower necessary to ensure essential production, the Industrial Division of the Wartime Prices and Trade Board was set up to work in close liaison with the Manpower Procurement and Educational Branches of the Dominion Department of Labour.

During its operations the Industrial Division has observed and gathered material which has proved valuable in increasing the output of workers without demanding more than a fair day's effort from them. These data have been assembled in handbook form in the belief that they will prove valuable in assisting the management of concerns producing essential civilian goods to increase their output from available manpower. In reading and applying the ideas put forward in this handbook, the reader is cautioned that the difficulties in making use of the material are those inherent in the application of any general principles to a particular situation. The methods, procedures and ideas presented must be selected and applied with discrimination. In other words, they must be interpreted and modified in the light of the specific circumstances.

Section I is a discussion of the national aspects of the problem of manpower loss, and Sections II to V inclusive summarize methods of attacking the problems of individual establishments. The latter four sections are short, interdependent and of particular interest to employers. It is suggested that they be read carefully in order to assimilate the underlying approach.

Section VI is a review of the twenty-seven basic causes of manpower loss most common in Canadian industry. Section VII is a manual of twenty-three remedies found valuable in combating these basic causes of loss. Sections VI and VII are a guide to the selection and the application of remedies and should be referred to only after diagnosis has revealed the basic causes of loss in the establishment.

D.G.M.

Chief, Industrial Division.

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SECTION I

MANPOWER LOSS—A NATIONAL PROBLEM

The war effort has required a great diversion of manpower and materials into the Armed Forces and into war industries in all of the United Nations. The extent of the diversion has been limited only by the need for supplying civilian industry with sufficient labour and materials to maintain the best all-round war effort possible. Military, geographic, psychological, and economic considerations made it necessary for some of the Allies to reduce their output of non-war goods even below this minimum level. Therefore, to maintain the overall supply position, other nations had to devote a larger proportion of their production to essential civilian goods.

Briefly, Canada's role in the overall United Nations plan has been:

1. To maintain Armed Forces in the field;
2. To produce war materials for our Allies as well as for our own troops;
3. To produce a sufficient volume of essential civilian goods to meet our minimum demands and to export to our Allies who are unable to produce these goods themselves. The cutting off of a substantial proportion of our prewar imports of such goods has accentuated the problem. Primary textiles, leather, processed foods, etc. are among the goods whose output has had to be greatly expanded.

The manpower necessary to realize these three objectives could come from three sources:

1. From the pool of persons not previously gainfully employed;
2. From industries producing less essential civilian goods whose output could be curtailed or eliminated without detriment to the war effort;
3. From an increase in the productivity of the persons already employed in essential industries.

The first of these sources was long ago exhausted; the second has not supplied the required volume of labour to meet the demands of essential industry. Therefore, it has been necessary to turn to the third source of manpower to meet the requirements of our war and essential civilian industries.

Purpose of Handbook.—This Handbook has been prepared to assist the manufacturers of essential civilian goods to realize the maximum fair return in worker effort from each labour dollar spent. Until very recently, progress in technological development has far outstripped efforts to increase the productivity of manpower resources by applying better methods of converting the expenditure of human energy. As a consequence, the full potential value of the services of the average worker, either to his employer or to himself, has never been approached. Manpower resources are being sapped and squandered in unnecessary strikes, excessive ab-

senteeism, high labour turnover and subnormal worker productivity, all of which result largely from ignorance and avoidable misunderstandings.

When the national economy was not strained to its maximum, this waste was deplored but little was done to correct it. During wartime, when every unit of output assumed the greatest significance, the realization of the effects of the waste of human resources was driven home. Since the loss to the Canadian economy is the sum of the losses of individual manufacturers and their employees, this Handbook is directed to the individual employer in his relations with his employees. It indicates the significance of the manpower wastage problem to every manufacturer in time of peace or war, it analyzes the causes of the loss of worker productivity, and it outlines tested remedial measures. It is particularly directed to the attention of the medium- and small-sized manufacturing concerns whose managers have not had full opportunity to review recent developments.

Effect of General Economic Conditions on Labour Productivity.—The basic causes of manpower loss in industry are not products of war or peace, slump or boom conditions. Unrest and dissatisfaction among employees were prevalent in prewar boom and depression years. The fact that manpower loss, evidenced by absenteeism, labour turnover and strikes, was relatively lower before the war is not attributable to absence of the basic causes of these maladies but to the fact that fear of insecurity rendered the causes less operative. The war, by reducing the worker's fear of unemployment, has accentuated labour unrest and increased manpower loss which were previously relatively dormant.

Many employers, assuming that the problem is merely one of wartime conditions, tend to take the attitude that there is no necessity for action on a permanent basis to remove the causes of manpower loss. In effect, the argument runs "Once the war is over there will be plenty of labour available and then the boys will be a little more careful about staying away from work, or quitting or going on strike". In other words, it is argued that under peacetime conditions the fear of unemployment and insecurity will again act as a check in keeping manpower loss at a minimum. This argument overlooks the fact that workers who stay at a job because of their fear of insecurity are less productive than workers who like their work and take a pride in it. But, even if that fact is disregarded, it is doubtful if the argument is correct. There are good reasons for believing that fear of insecurity and unemployment will not be present in this country in the postwar period to nearly the same extent as in prewar years.

Already considerable legislation affecting social security is in force (e.g., Unemployment Insurance, Old Age Pensions, etc.) and the public desire to achieve

"Freedom from Want" will probably lead to further legislation of this type. Labour stability will be affected unfavourably by the resultant lessening of the fear of unemployment. Even though demobilization and the termination of war contracts may produce a surplus of workers, the same degree of fear of unemployment that haunted the worker in the middle nineteen thirties will not be engendered. In this event, the manpower wastage which proved so costly to management in wartime will continue after the war, although probably at a somewhat lower level. Employers will be well advised to examine the causes of and remedies for their manpower loss, not only as it affects wartime production but as it will weigh upon operating costs during the transition and postwar periods.

Manpower Loss under Wartime Conditions.—

Although this Handbook has been prepared as a guide which will be of permanent value to management, some reference should be made to wartime conditions. By increasing the intensity of the problem of manpower loss, the war has brought into focus certain facts relative to the extent and causes of the loss. A quick review of these facts will be of value in assessing the scope of the problems which confront management in peacetime and will assist in the formulation of a program for meeting these problems.

During the war the Canadian industrial economy had to meet an ever increasing strain on its capacity in order to satisfy the needs of the Armed Forces and the civilian population. Lack of adequate manpower was the crux of the problem and only by utilizing available manpower resources in a more and more thrifty manner was it possible to meet the essential requirements for goods and services.

In 1939, 3,700,000 persons were gainfully occupied in Canada. Of these 2,500,000 were engaged in civilian industry; the remaining 1,200,000 were in agriculture. By December, 1943, the total working force had increased to 5,000,000. However, despite an increased legitimate need for essential civilian products, the number of persons in civilian industry had fallen to 2,200,000. The remaining 2,800,000 persons had been absorbed by the Armed Forces (770,000), war industry (1,100,000) and agriculture (930,000).

Moreover, the civilian industrial working force had suffered, not only from a reduced number of workers, but from a serious reduction in efficiency. The majority of the 1,900,000 men and women in the Armed Forces and war industry constituted the bulk of the able-bodied, intelligent workers who were, in peacetime, engaged in the production of civilian goods and services. Because of the withdrawal of such an important part of peacetime industry's normal personnel, it was necessary to find and train new workers to produce the volume of civilian goods and services needed in wartime. The newcomers to industry included those not accustomed to earning their own livelihood as well as workers whose low productivity had, in prewar years, made them ineligible for industrial employment.

Further, wartime conditions of plentiful jobs, good pay, and great wage differentials created considerable independence and unrest among employed labour. Added to this, the fear of unemployment was no longer present to stimulate the worker to produce to his real capacity. A condition had been created where, with

little provocation, an employee would seek a job elsewhere or assume an indifferent attitude to his work. Industrial employers were forced to rely on a decreasingly effective and, therefore, increasingly costly working force. Since these conditions may continue indefinitely, it is highly desirable to examine the extent of the manpower loss for which they are responsible.

The evidences of manpower loss can be broadly classified under the following headings:

- Low output per man-hour of work;
- Abnormally high labour turnover;
- Preventable absenteeism;
- Strikes and lockouts.

An analysis of the estimated avoidable manpower loss under each of these headings is given in Appendix A, p. 87, but it is interesting to note here that the unnecessary wastage of manpower in 1943 amounted to approximately 100,000 man-years, a force greater considerably than the total number of workers required to keep in operation all the steam railways of Canada (84,519 in October, 1943).

The Need for Joint Action.—In view of the scope and complexity of the problem and the wide diversity of the interests of those affected, the greatest improvement is attainable only through the whole-hearted joint and several efforts of at least four groups:

- The industrial wage-earners;
- The workers' organizations;
- Management and owners of business;
- Dominion, provincial and civic governments.

These groups accomplished much in providing additional labour for wartime activities and a little in increasing the output of industrial employees. But they have not generally recognized the possibilities of salvaging the manpower wastage so prevalent in industry to-day. Unfortunately, no single plan for accomplishing this can be formulated for the problem is, in fact, not one problem at all but the aggregate of the different problems of the tens of thousands of establishments throughout the country. It requires the efforts of each industrial establishment, in co-operation with legislative groups and labour organizations, to alleviate the individual losses.

Government Legislation and Wages as Factors in Reducing Manpower Loss.—In this Handbook attention is largely concentrated on the action which the management of private enterprise can take to reduce manpower loss. However, it is desirable first to examine two other influences on manpower loss.

Government Legislation.—As the need has been recognized, the Government has passed legislation designed to improve the use and distribution of the nation's manpower. A realistic viewpoint must be accepted with respect to any government legislation, for the degree of success achieved is dependent on two interrelated factors:

- That the act is acceptable to the majority of the people affected;
- That administration and enforcement of the act are possible to a sufficient degree to warrant its application.

As examples of this consider the effects of wartime labour legislation:

It was found impractical even during wartime to freeze a man in one particular job or to one particular employer. However, by requiring men to take employment within the confines of an industry, such as the steel industry or the textile industry, the rate of male labour turnover was reduced materially.

Certain types of strikes were made illegal; but, in spite of this, such strikes were not entirely eliminated. The difficulties involved in the enforcement of a penalty on a large body of strikers is obvious. However, the very existence of the regulations and of the Regional and National War Labour Boards and the Industrial Production Co-operation Board curbed to a great extent the use of strikes as a weapon in labour-management disputes.

Vocational training and plant school services of proven merit have been made available to industry; but, good as they are, they are valueless until put into effect by employers.

Government alone cannot solve the nation's manpower problems, but it must be the guide and does play a useful role. Although no over-all manpower plan can be devised and administered by government alone that will prove more than partially effective, legislation has helped and will continue to improve the utilization of manpower. Legislation can never replace but does complement efforts made jointly and severally by workers, unions, management and the community.

Wages.—Wide experience indicates that the payment of a higher wage does not necessarily reduce labour turnover, absenteeism or improve worker productivity. This opinion is confirmed by statistics gathered on the relation of wages to labour turnover. Moreover, since there is a direct relationship between abnormal labour turnover and the other evidences of manpower loss, i.e., low productivity and abnormal absenteeism, the conclusions drawn from these statistics can be considered applicable to all three evidences.

Chart C facing p. 88 shows weekly earnings in and labour turnover experienced by 261 establishments in civilian and war industry. Each establishment is located on the Chart with respect to both earnings and labour turnover. The Chart indicates that:

High labour turnover occurs regardless of whether wages are low or high, and, similarly, low labour turnover occurs with high and low wage rates.

High wages do not necessarily result in low labour turnover, many plants with very high wage rates also having excessive labour turnover. Similarly, plants with low wage rates in many cases have very low labour turnover.

Since only in cases of extremely high or extremely low wages is there any evidence of relationship between wage rates and labour turnover, other influences operating collectively must be the decisive factor in the rate of labour turnover which prevails in the great majority of plants.

Therefore, it is concluded that the payment of high wages does not necessarily solve the problem of manpower loss in industry.

SECTION II

A PROGRAM FOR MANAGEMENT

The national manpower loss discussed in Section I is the sum of the losses of all establishments throughout Canada. Individual plants are bearing the brunt of the financial cost of this loss. Individual management is in the best position to take the initiative in eliminating the loss occurring within its own establishment. Therefore, this Handbook offers to management a program for the reduction of manpower loss in individual plants.

The following outline indicates the successive steps which management should take to combat the problem of manpower loss.

Determination of the Dollar Cost of Manpower Loss.—Determine the total preventable dollar cost of manpower loss in the plant and the comparative cost of each of the four evidences of loss (absenteeism, labour turnover, low worker productivity, strikes and lockouts). A summarized account of a method of determining the cost of manpower loss is presented in this Section and a detailed exposition of the method is contained in Appendix C, p. 89.

DETERMINATION OF THE DOLLAR COST OF MANPOWER LOSS

Purpose of Analysis of Dollar Cost of Manpower Loss.—The objects of an analysis of the cost of manpower loss are to determine:

The total preventable cost to management of the four evidences of manpower loss (i.e., absenteeism, labour turnover, low worker productivity, strikes and lockouts). This figure will form the basis for a decision as to the size of the expenditure justified for a program of remedial action.

The comparative dollar cost of each of the four evidences of manpower loss. With this knowledge, remedial attention can be concentrated on correcting those faults which are costing the plant the most money.

Appendix C, p. 89 of this Handbook is devoted to a detailed analysis of a method of assessing the dollar cost of manpower loss in an individual plant and should be closely studied before any attempt is made to assess the cost of loss. The following outline gives a brief summary of the steps in the method.

Establishment of a Yardstick to Measure the Cost of Manpower Loss.—The first step is to set up a yardstick designed to measure *the dollar value to management of the average daily output per worker*. This yardstick is hereafter referred to as the "Worker Value Unit", or the W.V.U. When a worker's output is either lost (as when he is absent or his job is unfilled) or when

Diagnosis of the Causes Responsible for Manpower Loss.—Determine the basic causes (e.g., excessive hours of work, apathy and frustration, personal problems, etc.) of manpower loss. The principles to be observed and the methods to be used in making a successful diagnosis are discussed in Section III, p. 12.

Analysis of Attitude of Management.—Determine by self-analysis whether a reactionary attitude on the part of management toward employer-employee relations and programs for the reduction of manpower loss is intensifying the effect of the basic causes of manpower loss. This step is discussed in Section IV, p. 16.

Establishment of Advisory and Administrative Machinery.—Establish the advisory and administrative machinery necessary for examination of the results of diagnosis, recommendation of remedial measures, and application and administration of the measures adopted. Suitable machinery for this purpose is discussed in Section V, p. 17.

it is only partially realized (as when his efficiency is below normal) there is a direct dollar loss to management. This loss can be measured in terms of the value which his work would have had to management had it been carried out or, in other words, in terms of the W.V.U.

How to Determine the W.V.U.—The daily output of every worker is directed to producing goods and services to be sold. The selling price of such goods is made up of direct costs, indirect costs and profit. When a worker does *not* produce, direct costs (i.e., wages and material costs) are not incurred, but indirect costs continue and are not met and no profit is created. Therefore, the value to management of the average daily output per worker (W.V.U.) can be considered as *the contribution which that worker's output makes to meeting indirect costs and to creating profit*. The W.V.U. can be determined by dividing indirect cost plus profit for any given period by the number of man-days worked in that period. The procedure is a comparatively simple one and is discussed in detail in Appendix C, p. 89.

The Accuracy of the W.V.U.—For a variety of reasons discussed in Appendix C, p. 89, the use of the W.V.U. produces a conservative estimate of the dollar cost of manpower loss.

Application of the W.V.U. to the Four Evidences of Manpower Loss.

The Cost of Absenteeism.—When a worker is not at his job, for whatever cause, the value to management of his normal output is completely lost. Therefore, the total cost of absenteeism in a plant is the total absences (expressed in days) multiplied by the W.V.U. (for details of method, application, examples, and discussion of accuracy see Appendix C, p. 89).

The Cost of Labour Turnover.—The cost to management each time a worker quits his job is made up of three elements. The sum of the dollar cost of these elements is the total cost of labour turnover.

- (i) The loss owing to the low productivity of a "leaving worker" between the time he decides to leave his job and when he actually quits. Experience in particular plants undoubtedly varies but, on the whole, a loss equivalent to 3 full days of productivity per separation can be expected. Therefore, the cost is:

Number of workers leaving employ of company during year $\times 3 \times$ W.V.U.

- (ii) The loss during the period that the position remains vacant. This loss is directly comparable to loss due to absenteeism and may be computed by multiplying the W.V.U. by the total number of days that vacancies were not filled during the year.
- (iii) The loss owing to the low productivity of the new worker during the training period. Various factors make a direct assessment of this loss impossible, but plant experience has indicated that, in the industrial field in general, the equivalent of at least 6 full days are lost each time a new worker must be hired and trained. Therefore, the cost is:

Number of new workers hired $\times 6 \times$ W.V.U.

For details of method, application, examples, and discussion of accuracy see Appendix C, p. 89.

The Cost of Low Worker Productivity.—While direct estimates of this cost are not practicable, studies indicate that worker productivity in a plant which is experiencing what its management considers to be high labour turnover is apt to be in excess of 5 per cent below normal. The cost of the loss can be computed by multiplying total value to management of worker output (indirect costs plus profit) by 5/100 (for detailed discussion see Appendix C, p. 89).

The Cost of Strikes and Lockouts.—Since this factor is of the nature of mass absenteeism, the cost of manpower loss due to it may be calculated by multiplying the number of man-days lost as a result of the strike by the W.V.U. (for detailed discussion see Appendix C, p. 89).

Preventable Portion of Manpower Loss.—It must be realized that even the most intense campaign of remedial action cannot eliminate all manpower loss. While the proportion of manpower loss which is preventable varies from plant to plant, experience based on 1943 standards of loss indicates that the following average reductions of loss can be achieved (see Appendix C, p. 89).

Absenteeism	— 30% preventable.
Labour Turnover	— 50% preventable.
Low Worker Productivity	—100% preventable.
Strikes	—100% preventable.

This, then, is the goal for which every plant may reasonably aim. If remedial action has already been taken, the savings to be achieved by a comprehensive program of the type outlined in this Handbook will be proportionately less. Having determined the dollar cost of manpower loss in an individual plant and the dollar saving which can be realized by the elimination of the preventable portion of that loss, management can determine the size and scope of the program of remedial action which it should develop and apply.

SECTION III

DIAGNOSIS OF THE CAUSES RESPONSIBLE FOR MANPOWER LOSS

Assuming that management has established that the dollar cost of preventable manpower loss is sufficient to warrant further investigation, the next step is to diagnose the causes responsible for this loss. This Section is a discussion of the diagnosis stage in a program of remedial action.

The Importance of Proper Diagnosis.—The importance of proper diagnosis of the basic causes of manpower loss cannot be over-emphasized. The loss can be substantially reduced by the application of tested remedial measures; but, unless management knows which causes are basically responsible for the manpower loss in its plant, it cannot determine which remedial measures should be applied and may waste much effort and money on measures which do not accomplish any significant reduction of manpower loss.

Why Diagnosis in Each Plant is Necessary.—This Handbook identifies, discusses, and proposes remedies for the twenty-seven basic causes of manpower loss most frequently present in industrial establishments. However, it is impossible to make general statements applicable to the whole industrial field as to the causes which are most prevalent and significant or to prescribe universally applicable methods of treatment. Each plant has its own particular problem and it would be a fortuitous circumstance if a program successful in one plant were found to fit the requirements of another establishment. Each plant must be analysed on the basis of its own problems if the diagnosis of basic causes and the prescription of remedial measures are to prove successful.

Employee Co-operation in Diagnosis.—A fundamental requirement of successful diagnosis is the full co-operation of employees. It is the employees of the plant who are either going to produce to their full capacity or are going to be absent from work, change jobs or, in extreme cases, go on strike. Therefore, it is only from them that management can discover the conditions basically responsible for employee dissatisfaction and unrest which manifest themselves in manpower loss. Employees will be willing to co-operate in a program for the reduction of manpower loss only if they have full confidence in management and a full share in and an understanding of the program which is being instituted. The subject of employer-employee relations is discussed in detail in Section IV, p. 16. There are two principal mechanisms for obtaining employee co-operation and participation in the program.

The Labour-Management Round Table.—This is a method by which individual employees may obtain easy access to "top management" to discuss their problems. The establishment of the Round Table will do much to win the confidence of employees and will prove a valuable and permanent part of the program

for reducing and preventing manpower loss. Section V, p. 17, discusses in detail the role of the Labour-Management Round Table.

Group or Mass Meetings.—This is particularly effective as a method of obtaining employee co-operation at the outset of the campaign to reduce manpower loss. The aims of the campaign and an outline of proposed action can be explained and the help of the employees in achieving the desired results can be enlisted. Procedure to obtain most effective results from this method is discussed in Appendix G, p. 106.

Method of Diagnosis.—Diagnosis falls into two stages: First, mapping out a plan; Second, application of the plan. There are three methods by which management can conduct a practical diagnosis of the underlying causes of manpower loss:

Management can conduct its own diagnosis within the plant;

Management can call in an organization or individual qualified to map out and actually conduct the diagnosis;

Management can have a course of action mapped out by experts and conduct the diagnosis itself.

Whatever method is chosen, it is essential to obtain the real views of employees on conditions both directly and indirectly affecting their work. Only in this way can common grievances and hardships be isolated and recognized.

Methods of Obtaining Employee Opinions.—The most effective methods of obtaining employee opinions are the following:

Employee Opinion Questionnaires.—This method should be used in conjunction with group or mass meetings. For discussion and sample questionnaire form, see Appendix D, p. 95.

Absentee Interviews.—This method, if properly handled, can be very valuable in obtaining the individual opinions of employees responsible for absenteeism. The principles by which such interviews should be conducted and sample absentee interviews are dealt with in Appendix E, p. 103.

Termination Interviews.—This is a practical way to determine the basic causes of high labour turnover. In addition to disclosing employee complaints, such interviews will, in many cases, succeed in preventing the worker from leaving. See Appendix F, p. 105, for a discussion of the principles of conducting such interviews.

The Labour-Management Round Table.—This procedure has already been mentioned as a method of obtaining employee co-operation. In addition it has a

number of other valuable functions which make it the keystone of the mechanism by which management's program to reduce manpower loss can be implemented. The following are the most important of these functions:

Laying the groundwork and preparing employee opinion for the group or mass meeting which introduces the campaign to employees;

Enlisting employee co-operation in the response to the employee opinion questionnaire;

Assisting in the analysis of the results of the employee opinion questionnaire;

Investigating complaints revealed to management by absentee and termination interviews;

Serving as a channel by which complaints and suggestions of employees can be brought to the attention of management and investigated;

Assisting management in the determination and application of remedial measures;

Obtaining employee co-operation in realizing the benefits of remedial measures;

Diagnosing and taking steps to eliminate new or recurring causes of manpower loss as they arise.

The role of the Labour-Management Round Table in industry is discussed in detail in Section V, p. 17, and its organization and operation are dealt with in Appendix G, p. 106.

How to Analyse Information Obtained from Diagnosis.—The above methods of diagnosis will provide management with considerable information on employee opinions and complaints. The next step is to deduce from this material the basic causes which are responsible for manpower loss in the plant.

The information gained from the various methods of diagnosis will be of four types:

Basic causes of manpower loss (e.g., excessive hours of work, inadequate lighting, poor health, etc.);

Superficial causes of loss which should be traced through to their underlying basic causes (e.g., low morale, which may be due to a variety of basic causes such as monotony and boredom, foreman mismanagement, etc.);

Pet complaints and opinions of a few workers, organized minority groups, or chronic malcontents;

Complaints arising not from any specific basic causes but from general dissatisfaction with management's policy toward employees.

The following paragraphs discuss how each of these types of information may be recognized and the part each should play in diagnosis.

Basic Causes of Manpower Loss.—An analysis of the problems of industrial plants has revealed twenty-seven basic causes of manpower loss. The Manpower Loss Chart (facing p. 19) depicts the relationship between these basic causes, the evidences of manpower loss, and possible remedies. For convenient reference the basic causes, classified in three groups, are listed at this point.

THE WORKER AND HIS JOB

- Excessive Hours of Work
- Foreman Mismanagement
- Improper Ratio of Worker Types
- Income Tax
- Incompatibility with Job or Fellow Workers
- Low Wages
- Wasteful Effort
- Excessive Carelessness

PHYSICAL AND PSYCHOLOGICAL CONDITIONS WITHIN THE PLANT

- Apathy and Frustration
- High Proportion of Women Workers
- Improper Nutrition
- Improper Ventilation and Temperature
- Inadequate Lighting
- Insecurity
- Insufficient and Unsanitary Washrooms
- Monotony and Boredom
- Poor Plant Housekeeping
- Rules Violation
- Unaccustomed Prosperity

PHYSICAL AND PSYCHOLOGICAL CONDITIONS OUTSIDE THE PLANT

- Lack of Recreational Opportunity
- Night Shifts
- Personal Problems
- Poor Health
- Poor Housing
- Poor Transportation
- Shopping Problems
- Unavailable Day Nurseries

Any or all of these causes may be present in varying degrees in a plant which is experiencing manpower loss. The job of diagnosis is to determine which of these causes actually are present and sufficiently serious to warrant attention.*

To aid management in identifying these basic causes, each is discussed in Section VI, p. 19.

The employee opinion questionnaire is designed with the specific purpose of bringing to light the basic causes of manpower loss in the plant. Further indication of the presence of these causes will result from absentee and termination interviews. However, care must be taken to interpret these sources of information correctly. In general, it may be assumed that if the interviews and questionnaires show a large proportion of employee opinion to be dissatisfied with certain conditions, those conditions represent basic causes of manpower loss. In

*It may be contended that the causes falling under "Physical and Psychological Conditions Outside the Plant" are not the responsibility of management; but, since the productivity of a worker is conditioned by his whole environment, it is obviously in management's own interest to concern itself with the conditions surrounding workers outside as well as inside the plant.

this case, management should conduct a thorough investigation and take steps to implement remedial measures. In addition, however, the opinions of small groups of employees should be carefully considered if they seem to reflect a reasonable objection to present conditions. Since it is neither practical nor consistent with economic operation to correct all complaints of employees, care should be taken that attention is centred on those basic causes which appear to be principally responsible for manpower loss.

Superficial Causes of Loss.—There are four reasons frequently given which are superficial causes of manpower loss but are not basic causes of loss. These are:

- High Accident Rate
- Abnormal Fatigue
- Low Morale
- "Alleged" Sickness

Casual examination of plant conditions, examination of absentee records, poorly conducted absentee or termination interviews, and hasty analysis of employee opinion questionnaires may lead to the conclusion that the four factors listed above are responsible for much of the manpower loss in the plant. These factors are, however, merely the outward manifestations of various basic causes. To reduce the extent of manpower loss it is the basic causes which must be diagnosed and remedied. It is not sufficient to discover, for example, that sickness is causing abnormal absenteeism or that fatigue is causing low output per man-hour. It is necessary to find the *underlying* causes of such sickness and fatigue. Just as absenteeism and low worker output are evidences of the superficial causes of sickness and fatigue, so sickness and fatigue are themselves the result of one or more basic causes, such as inadequate lighting, foreman mismanagement, etc.

To aid management in discovering the basic causes of manpower loss in its plant, the four superficial causes are analysed below, showing the basic causes which may underlie each.

High Accident Rate.—Carelessness is the main reason for accidents, but is not itself a basic cause. While it is true that accidents can be reduced by safety campaigns designed to eliminate carelessness, even better results can be achieved by also eliminating the basic causes which contribute to excessive carelessness. These include: rules violation, foreman mismanagement, lack of the right kind of discipline, excessive hours of work, apathy, inadequate lighting, monotony and boredom, improper training.

Abnormal Fatigue.—Abnormal fatigue is often listed as one of the chief causes of manpower loss, since its effect on the four evidences of manpower loss is very noticeable. As employees' fatigue increases, the quality and volume of their work decreases. In addition, a fatigued worker in a gang operation slows up the production of the whole group as well as that of other workers dependent upon that group for supplies. The costliness of fatigue is also reflected in absenteeism losses, since fatigue is often a direct cause of sickness. Fatigue is often responsible for labour turnover since a tired worker may lose interest in his job and become indifferent towards his employer. Therefore, when diagnosis reveals that worker fatigue is prevalent in a plant, management

is well advised to seek out the basic causes of the condition. Among these are: excessive hours of work, wasteful effort, improper nutrition, improper ventilation and temperature, inadequate lighting, lack of recreational opportunity, night shifts, personal problems, poor health and poor transportation.

Low Morale.—A worker whose morale is low is inclined to stay away from work on the slightest provocation; his output is less than that of a keen, enthusiastic employee; he is inclined to make frequent changes of employment. Any or all of the basic causes of manpower loss may cause low worker morale. When this factor is prevalent in a plant, management should make further diagnosis with the specific view of discovering why worker morale is low. Undoubtedly one of the most common causes of low worker morale is faulty attitude of management toward its employees, and management would do well to review its whole employee relations program (see Section IV, p. 16).

"Alleged" Sickness.—Much absenteeism for which sickness is given as the reason is really attributable to other factors because:

Much sickness is due to one or more of the 27 basic causes of manpower loss, e.g., excessive hours of work, improper nutrition, improper ventilation and temperature, insufficient and unsanitary washrooms, lack of recreational opportunity, etc. By discovering which of these basic causes of sickness are present and by applying suitable remedies, absences due to sickness can be substantially reduced.

Most absentee records are based on the employee's own excuse for absence and these excuses are usually accepted at their face value. A study of report cards used by industrial establishments revealed that in most cases the employee has little choice but to blame sickness for his absence, since these report cards fail to get down to basic causes. Moreover, it is only natural that an employee will give as an excuse for his absence a reason which management will accept with little question.

Carefully conducted absentee interviews can do much to elicit the true basic causes of absences attributable to sickness, and a careful study of employee opinion questionnaire results will reveal that many of the conditions listed above are actually the basic causes of these absences.

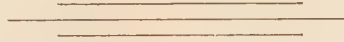
Pet Complaints and Opinions of a Few Workers, Organized Minority Groups, or Chronic Malcontents.

—Care must be taken to avoid accepting at face value complaints and opinions of this type. Such opinions may be either totally unfounded, or they may be based on exaggeration of actual conditions. Opinions which are freely given by particularly outspoken employees are often of this type. Organized minority groups may seek to take advantage of the methods of diagnosis to obtain action on matters that are of little significance to the whole body of employees. Careful diagnosis will indicate the opinions which fall in this category and enable management to avoid wasteful expenditure on remedying conditions which are not basic causes in the plant as a whole. Diagnosis may reveal that much of the discontent of this type can be traced to a few chronic malcontents among employees.

Since even a few malcontents can have a serious effect on the morale and productivity of a much greater number of employees, they should be either persuaded to change their attitude or be discharged.

Complaints Arising not from any Specific Basic Causes but from General Dissatisfaction with Management's Policy Toward Employees.—If the answers to employee opinion questionnaires and employee interviews reveal more than a healthy general dissatisfaction with existing conditions but, because of the great diversity of complaints, do not point to the pres-

ence of basic causes, it is altogether probable that it is the attitude of management towards its employees that is causing dissatisfaction and unrest. Absence of a sound employee relations program sincerely applied is one of the most common and fundamental causes of high manpower loss in a plant. In other words, if other basic causes of loss are present, their effect is intensified by employee dissatisfaction with the attitude of management. Even when all other causes of manpower loss are eliminated, dissatisfaction with management's attitude can be responsible for a high level of manpower loss.



SECTION IV

ANALYSIS OF ATTITUDE OF MANAGEMENT

Why Management Should Review Its Attitude Toward Employees.—In Section III, it was observed that diagnosis may reveal that one of the fundamental causes of manpower loss in a plant is employee dissatisfaction with the attitude of management towards its working force. Under such conditions, a revision of management's attitude can result in a substantial increase in the productivity of employees. When the worker is convinced that management has a sincere appreciation of the position of labour in the organization, the resultant improvement in employee morale, good will, and willingness to co-operate with management will be reflected in lower absenteeism and labour turnover, and higher output per worker. Since the basic causes of preventable manpower loss are for the most part psychological, it is apparent that the establishment of a good relationship between management and labour, and the application of remedies in a spirit of co-operation are of fundamental importance.

Another factor which management should take into account in reviewing its employee relations policy is the steady improvement in the position of labour in the Canadian economy. Social legislation (which has removed much of labour's fear of insecurity), union influence, and labour legislation have already strengthened the position of labour in relation to that of the rest of the community. This trend, accelerated under wartime conditions, will in all probability receive no more than a temporary set-back in the postwar era. Regardless of its opinion as to the desirability of this trend, management should take a realistic view of the situation and act to anticipate the changed position of labour. Management stands to gain much from developing plans for improving employee relations *before* such a step is forced upon it under less advantageous conditions.

Fundamentals of Sound Employer-Employee Relations.—The criterion of a good attitude on the part of management toward its labour force is whether management has labour's confidence and co-operation. Trained personnel men, the unions, and the great majority of individual workers are agreed that the following conditions are fundamental to sound employer-employee relations:

The employee must feel that he is a part of the organization;

That his contribution is of value;

That this is so recognized by management; and

That the employee will receive fair compensation and benefits for his share in the enterprise.

Unless these conditions are realized, there is little hope for even the most carefully planned programs for the reduction of manpower loss.

How to Assess Employer-Employee Relations.—In most plants management knows whether or not employees are satisfied with the existing pattern of employer-employee relations. The general attitude of employees in their day-to-day contacts with manage-

ment indicates whether or not the four fundamental conditions of good relations set forth in the previous paragraph are present in the plant. The replies to the employee opinion questionnaire will add to the information on this subject. However, the soundness of attitude towards employees can best be assessed by management itself, for frank self-analysis may reveal not only that some revision of management's attitude is necessary but also will indicate which aspects of attitude should be revised. In Appendix H, p. 109, a check list for management is provided as a guide to self-analysis. If the answers which management frankly gives do not correspond to those which indicate a sound attitude toward employees, some thought should be given to the benefits which would accrue through increased worker co-operation if management's attitude were revised.

Overcoming Suspicion and Distrust.—It must be expected that programs to improve employer-employee relations and to eliminate the basic causes of manpower loss will encounter suspicion and distrust among management groups as well as labour. Over a period of time the confidence of labour can be won if management observes certain principles:

The program must be applied 'in the spirit' rather than 'to the letter'. In other words, it is more important to make a minor concession which gains the confidence of labour than to insist on rigid application of a remedial measure.

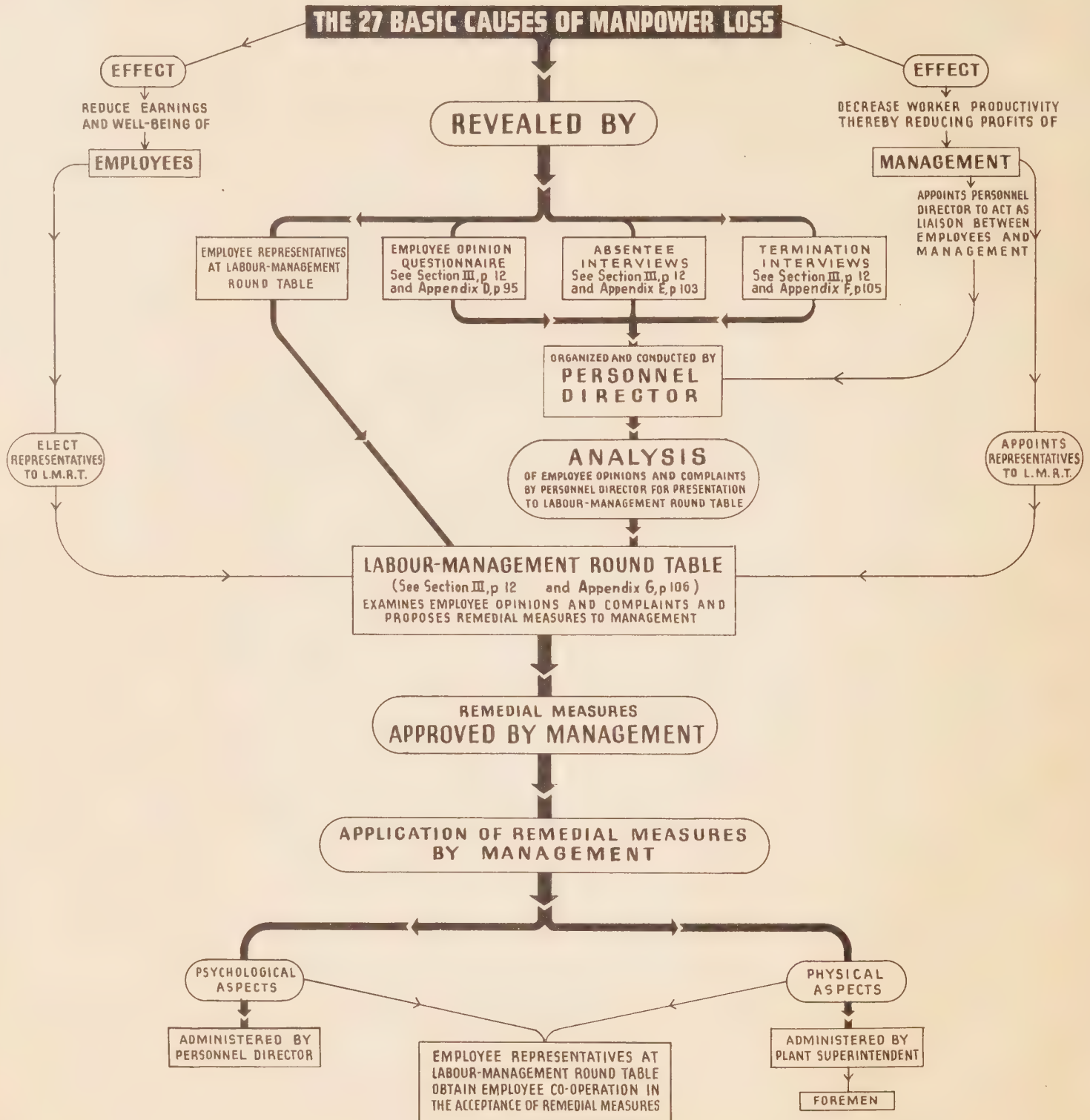
Management must regard the program not as a temporary 'sop to the workers' but as a permanent step forward in industrial relations which will prove of long-term benefit to the company.

Labour must be taken into management's confidence at all stages during the development and institution of the program. This can be achieved by holding a mass meeting at the outset to explain the program, (see Appendix G, p. 106) and by setting up administrative machinery in which labour representatives play an important part.

On management's side distrust of such a program may be found, not only among line executives, but from top management itself. In fact, probably the most restraining influence on the growth of better industrial relations plans and the realization of a fair day's output from a fair day's work is the mistaken belief that such plans will interfere with the rights of management to plan and direct the policies of the establishment. This belief is ill-founded. The institution of the type of program outlined herein need not interfere with the established rights and responsibilities of management nor destroy the discipline necessary to the efficient operation of a plant.

This view is shared by progressive management and by trade unions themselves. The CIO in its booklet "Production for Victory" states that one of the major difficulties encountered by Labour-Management Committees is the attitude on the part of management that its right to manage is being infringed upon.

FLOW CHART SHOWING METHODS AND MACHINERY FOR DIAGNOSING AND REMEDYING BASIC CAUSES OF MANPOWER LOSS



SECTION V

ESTABLISHMENT OF ADVISORY AND ADMINISTRATIVE MACHINERY

There are three phases in the planning and application of a program to reduce manpower loss:

Advisory.—Examination of the results of diagnosis, determination of the basic causes of manpower loss and recommendation of suitable remedies.

Executive.—Adoption or rejection of recommended remedies.

Administrative.—Application and administration of the remedies adopted.

There are two objects in any program to reduce manpower loss: (1) To correct existing conditions which are basically responsible for manpower loss; and (2) to prevent the recurrence of these conditions and the outbreak of new ailments. This Section discusses the advisory, executive and administrative machinery which will achieve these objects in the simplest and most effective manner.

Advisory Machinery.—As noted above, the function of advisory machinery is to examine the results of diagnosis, determine the basic causes of manpower loss, and recommend suitable remedies. Since the basic causes of manpower loss either affect the worker directly or result from lack of co-operation and understanding on the part of both employees and management, it is essential to have employees represented on the advisory agency. Management alone, being out of touch with employees' problems or seeing but one side of these problems, is not qualified to decide which conditions are most in need of treatment or to determine suitable remedies. If the program is to realize the best results for employees in the form of improved working conditions and for management in terms of increased labour productivity and long-term benefit to the company, a channel for the free exchange of ideas and the development of mutual confidence and co-operation between management and employees must be established. An advisory agency including employee and management representatives and, during the initial stages, an outside expert on methods, operation, and personnel relations will fulfill this function best for it will be in a position to ensure that proposed remedial measures satisfy the following requirements:

That they correct the basic causes of manpower loss;

That they are consistent with economical operation and are of long-term benefit to the company;

That they meet the complaints of workers and are acceptable to workers;

That they receive the endorsement and support of the affiliated union or other employee organization.

Once the existing causes of manpower loss have been corrected it is important that the recurrence of these conditions or the outbreak of new ailments be prevented. This can be accomplished by the establishment of a

simplified advisory agency as a clearly-defined direct channel between the individual worker and management since it will enable management to keep close contact with employees' problems and to deal with them as they arise.

Form of Advisory Agency.—The form which the advisory agency takes will vary from plant to plant. The general term "Labour-Management Round Table" is used to signify meetings where all present meet on an equal footing, and is applied to all types of organized periodic meetings of the representatives of management and employees for the purpose of improving employer-employee relations through joint labour-management action. The factors which will determine the particular type of Labour-Management Round Table which is adopted are:

The number of employees;

The composition of the working force (whether it is fairly homogeneous or widely diversified by skills, occupations, functions, etc.);

The nature of the enterprise, its locality and the state of its employer-employee relations;

The extent of union influence;

The attitude of employees, trade unions and management towards formal labour-management committees as a method of dealing with matters affecting employer-employee relations.

Whatever the size of the plant, some form of Labour-Management Round Table should be established to act as an advisory agency in dealing with employer-employee relations and problems relating to the reduction of manpower loss.

In the case of large plants the Round Table can be a permanent organization, formally constituted and holding regular meetings. Here the form of labour-management committees recommended by the Industrial Production Co-operation Board of the Dominion Department of Labour has proven advantageous. In smaller plants a less formal type of organization is required and it is suggested that the manager or a representative of management meet informally with varying groups of workers who will then pass back the results of the meeting to the remainder of the workers and inform management of the consensus of employee opinion. In very small plants the most practical set-up is for the manager to maintain individual contact with each employee. The organization and operation of a Labour-Management Round Table is discussed in Appendix G, p. 106.

Some of the more important principles which should be considered when forming a Labour-Management Round Table are:

A Round Table should be empowered to advise management on every phase of labour-management relations *except* questions of wages and grievances falling under a collective bargaining agreement.

When a permanent committee is formed it is important that proper balance of representation be realized. Half the delegates should be elected by the workers.

If the establishment is unionized, union representatives should sit at the Round Table but, if it is an open shop, non-union employee delegates should also attend in proportion to their relation to the whole.

Management representatives should include the executive in charge of personnel.

Management representatives should be able to speak for and present the viewpoint of top management at Labour-Management Round Table meetings.

Employee representatives should be capable of assimilating and presenting the opinions of all the workers and not represent only an outspoken aggressive minority.

After the initial plans have been made and put into effect, management will want to take steps to prevent a recurrence of the same trouble or the development of new ailments. In most cases a continuation of the channel temporarily set up during the correction period will be too cumbersome and time-consuming. Furthermore, once labour is satisfied that management's intentions are 'on the level', a relatively more simple relationship will be feasible. Thus, a natural outgrowth of the initial analysis and corrective phase will be to arrange for suitable representatives of labour to meet regularly with management to advise on current and continuing matters of mutual concern.

Executive Machinery.—As noted on p. 17 of this Section, the executive function in the application of a program to reduce manpower loss is the adoption or rejection of the recommendations of the advisory agency as to remedial measures. Management alone can make this decision since any remedial action must be consistent with economical operation and conducive to long-term benefits to the company. However, since management should be represented at the Labour-Management Round Table (the advisory agency) by executives capable of speaking for and presenting the viewpoint of management, the recommendations of that body will in most cases be consistent with management's policy.

Administrative Machinery.—When proposed remedial action has been approved by management, it is the function of the administrative agency to apply and administer the remedies. Since the co-operation of employees is required if the remedial measures are to prove successful, it is advisable to delegate one or more of the employee representatives on the Labour-Management Round Table to assist in administration. The employee representatives can do much to assure the co-operation of the workers in accepting the remedies and in realizing the full benefits to be derived from them.

However, the chief responsibility for administration rests with management. The executive in charge of personnel should be responsible for the administration of remedial measures. Since he sits at the Labour-

Management Round Table, this executive will have full knowledge of the reasons why the remedial measure was adopted and will be in a position to administer it intelligently. This is an important point, since the rigid application of remedies 'to the letter' rather than 'in the spirit' can defeat the whole purpose of remedial action.

In large plants it is advisable to appoint a deputy of top management to be responsible for liaison between employees and the company as a full-time job. In smaller plants, an executive charged with other duties can perform the functions of Personnel Director in addition to his other responsibilities. In a very small establishment the manager himself can maintain direct contact with individual workers. In any event, the official in charge of personnel must be fully qualified for the job. He must have the confidence of both workers and management and be capable of interpreting the requirements of workers to management as well as the policy of management to workers. In addition to his duties in applying and administering remedial measures, it will be his function to organize the Labour-Management Round Table, to sit at it, usually as chairman but always as the interpreter between the two points of view, and to advise top management on the Round Table's recommendations. It is important that he be responsible only to top management and not to line management. The selection of a capable Personnel Director is one of the most important steps to assure the success of a program for reducing manpower loss through improved employer-employee relations.

General Comments.—Throughout this Section a distinction has been made between the advisory and administrative machinery suitable for a large plant and that which should be adopted in a small establishment. This does not suggest that employer-employee relations will be better in the larger establishment. On the contrary, the closer personal relationship possible in small organizations should tend toward the reverse being the case. However, most of the publicized pioneer work in improving relations and in methods and operations has been undertaken by the larger companies and, when this pioneering has been successfully applied, employer-employee relations have naturally improved. The measure of success achieved by larger plants is well illustrated by the case histories which are presented in Appendix G, p. 106. Fortunately, much of the experience of these large plants can be turned to practical ends by any establishment, whatever its size, provided that its management understands the basic principles and appreciates what it can afford to expend in inaugurating the changes and what profits are apt to be realized as a result of improving employer-employee relations.

Management may be somewhat sceptical of the initial cost of establishing machinery to reduce manpower loss, but it should bear in mind that these reductions can be maintained at negligible cost and that the long-term savings which result will generally more than offset the initial expenditures.

INDUSTRIAL MANPOWER LOSS

Evidenced by

ABNORMAL ABSENTEEISM HIGH LABOUR TURNOVER LOW OUTPUT PER WORKER STRIKES AND LOCKOUTS

Due to Four "Superficial" Causes

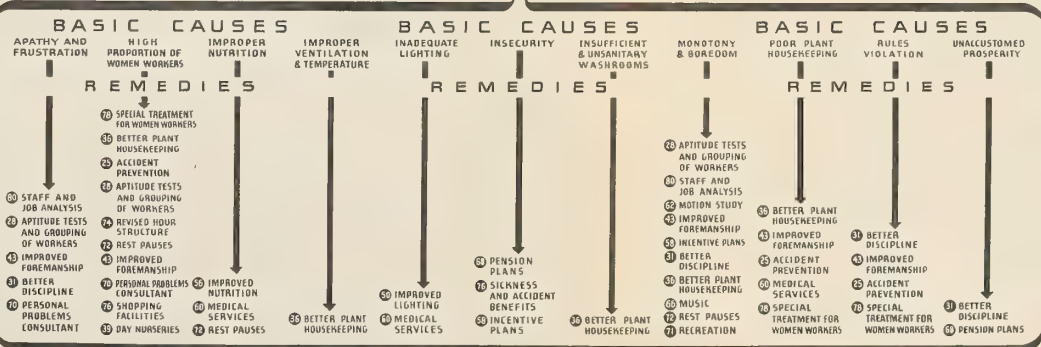
HIGH ACCIDENT RATE ABNORMAL FATIGUE LOW MORALE "ALLEGED" SICKNESS

RESULTING FROM 27 BASIC CAUSES AND INTENSIFIED BY REACTIONARY MANAGEMENT

THE WORKER IN HIS JOB

PHYSICAL AND PSYCHOLOGICAL CONDITIONS WITHIN THE PLANT

PHYSICAL AND PSYCHOLOGICAL CONDITIONS OUTSIDE THE PLANT



- REMEDIES**
- 24 REVISED HOUR STRUCTURE
 - 12 REST PAUSES
 - 41 IMPROVED FOREMANSHIP
 - 40 STAFF AND JOB ANALYSIS
 - 24 APITUDE TESTS AND GROUPING OF WORKERS
 - 25 MOTION STUDY
 - 25 ACCIDENT PREVENTION
 - 10 PERSONAL PROBLEMS CONSULTANT
 - 15 BETTER PLANT HOUSEKEEPING
 - 70 SPECIAL TREATMENT FOR WOMEN WORKERS
 - 31 BETTER DISCIPLINE
 - 40 STAFF AND JOB ANALYSIS
 - 41 EXPLANATION OF TAX LAWS
 - 20 APITUDE TESTS AND GROUPING OF WORKERS
 - 41 IMPROVED FOREMANSHIP
 - 10 PERSONAL PROBLEMS CONSULTANT
 - 70 SPECIAL TREATMENT FOR WOMEN WORKERS
 - 35 INCENTIVE PLANS
 - 74 REVISED HOUR STRUCTURE
 - 40 PENSION PLANS
 - 25 BETTER PLANT HOUSEKEEPING
 - 25 MOTION STUDY
 - 40 STAFF AND JOB ANALYSIS
 - 41 IMPROVED FOREMANSHIP
 - 25 ACCIDENT PREVENTION
 - 31 BETTER DISCIPLINE
 - 41 IMPROVED FOREMANSHIP
- BASIC CAUSES**
- EXCESSIVE HOURS OF WORK
 - FOREMAN MIS-MANAGEMENT
 - IMPROPER RATIO OF WORKER TYPES
 - INCOME TAX
 - INCOMPATIBILITY WITH JOB OR FELLOW WORKERS
 - LOW WAGES
 - WASTEFUL EFFORT
 - EXCESSIVE CARELESSNESS

- BASIC CAUSES**
- LACK OF RECREATIONAL OPPORTUNITY
 - NIGHT SHIFTS
 - PERSONAL PROBLEMS
 - POOR HEALTH
 - POOR HOUSING
 - POOR TRANSPORTATION
 - SHOPPING PROBLEMS
 - UNAVAILABLE DAY NURSERIES
- REMEDIES**
- 71 RECREATION
 - 24 REVISED HOUR STRUCTURE
 - 12 REST PAUSES
 - 25 TRANSPORTATION
 - 24 REVISED HOUR STRUCTURE
 - 40 STAFF AND JOB ANALYSIS
 - 72 REST PAUSES
 - 50 IMPROVED NUTRITION
 - 40 IMPROVED LIGHTING
 - 70 SPECIAL TREATMENT FOR WOMEN WORKERS
 - 35 TRANSPORTATION
 - 10 PERSONAL PROBLEMS CONSULTANT
 - 20 MEDICAL SERVICES
 - 75 SHOPPING FACILITIES
 - 70 SPECIAL TREATMENT FOR WOMEN WORKERS
 - 10 MEDICAL SERVICES
 - 72 REVISED HOUR STRUCTURE
 - 50 IMPROVED NUTRITION
 - 50 IMPROVED LIGHTING
 - 35 BETTER PLANT HOUSEKEEPING
 - 71 RECREATION
 - 70 PERSONAL PROBLEMS CONSULTANT
 - 35 TRANSPORTATION
 - 75 SHOPPING FACILITIES
 - 70 SPECIAL TREATMENT FOR WOMEN WORKERS
 - 35 TRANSPORTATION
 - 50 DAY NURSERIES
 - 70 PERSONAL PROBLEMS CONSULTANT

SECTION VI

THE TWENTY-SEVEN BASIC CAUSES OF MANPOWER LOSS

The following paragraphs discuss, give a guide to the identification of, and suggest remedies for the twenty-seven basic causes of manpower loss referred to on p. 13 of Section III and shown in graphic form in the Manpower Loss Chart on the opposite page.

THE WORKER AND HIS JOB

Excessive Hours of Work.—Excessive hours of work, except for short periods of emergency, do not result in a proportionate increase in production. In fact, the quality and quantity of production during a long working week may be lower than during a normal week, as workers unconsciously adapt themselves to the length of the working week. Similarly, even if the working week is not too long, low productivity may result if the length of the working day is excessive.

Identification: Lower rate of output per man-hour than that of similar establishments working shorter hours; a higher accident and absenteeism rate than that of similar establishments working shorter hours; excessive carelessness and defective work not attributable to other causes.

Remedies: *Revised Hour Structure.*—Shortening the working week may result in greater useful output per man-hour and even per week. See p. 74.

Rest Pauses.—If it is not practical to shorten the working week or the working day, rest pauses help counteract the effect of excessive hours of work. See p. 72.

Foreman Mismanagement.—Since the foreman is the point of daily contact between workers and management, his handling of workers largely determines their attitude towards management. In addition, the foreman is responsible for carrying out management's production program. Therefore, foreman mismanagement adversely affects worker productivity.

Identification: Prevalence in a particular foreman's group of low output; careless work; absenteeism and labour turnover above the plant average; frequent necessity for disciplinary action.

Remedies: *Improved Foremanship.*—See p. 43.

Staff and Job Analysis.—Proper selection of foremen and proper placing of workers by foreman improves the efficiency of the group. See p. 80.

Aptitude Tests and Grouping of Workers.—This remedy facilitates staff and job analysis. See p. 28.

Motion Study.—The foreman can utilize the principles of motion study to simplify and make easier the job under his supervision and thus increase the productivity of the workers in his group. See p. 62.

Accident Prevention.—Where accidents are prevalent in a particular foreman's group, the foreman should be instructed in the principles of accident prevention. See p. 25.

Personal Problems Consultant.—Worker dissatisfaction sometimes results from foremen attempting to solve problems which are better handled by a qualified personal problems consultant. See p. 70.

Better Plant Housekeeping.—If the foreman insists on better plant housekeeping, the efficiency and morale of the workers in his group will improve. See p. 36.

Special Treatment for Women Workers.—The foreman should be re-educated to cope with the special problems presented by the women workers introduced into his group. See p. 78.

Better Discipline.—Better discipline starts with the foreman. See p. 31.

Improper Ratio of Worker Types.—Lack of balance among the three worker types (static, mobile and potential junior executive) can have a serious detrimental effect on worker morale and plant efficiency. Plants with too high a proportion of mobile and potential junior executive workers among the rank and file usually are particularly subject to employee dissatisfaction with jobs and pay. Too high a proportion of static workers results in low output, spoilage, and defective work since some of the workers are employed on jobs which they have not the ability to perform and since it is difficult to recruit suitable supervisory staff from the workers' ranks.

Identification: Improperly balanced staff as reflected in too many or too few workers willing to and capable of assuming more exacting or responsible tasks.

Remedy: *Staff and Job Analysis.*—Determine whether staff is properly balanced and, if necessary, set up a program for achieving balance. See p. 80.

Income Tax.—Misunderstanding of the operation of income taxation leads many workers to believe that the major portion of overtime earnings or of standard earnings above a certain figure never reach their pockets but are paid straight to the Government and that labour as a class is being singled out for unfair treatment. Therefore, many workers refuse to work overtime or stay away from work after they have earned a certain sum per week.

Identification: High rate of absenteeism on overtime shifts; high rate of absenteeism towards the end of the pay period; general protests and grumbling.

Remedy: *Explanation of Tax Laws.*—See p. 39.

Incompatibility with Job or Fellow Workers.—Dissatisfaction, restlessness, and low productivity result from workers being placed on jobs for which they are not suited. Workers who are best suited to repetitive jobs should not be placed on tasks requiring initiative and quick response to new situations. If a worker is incompatible with his co-workers, the team spirit of the group is lowered and the output, both of the individual and of the group, suffers.

Identification: Lack of interest in the work as revealed by a marked falling off in quantity and quality of output after the initial period of employment; lack of ability to handle the job as revealed by failure of the worker to improve the quality and quantity of his output as he gains experience on the job; frequent quarrels; absence of team spirit.

Remedies: *Aptitude Tests and Grouping of Workers.*—Place workers on the job for which they are best suited. See p. 28.

Improved Foremanship.—The foreman should pick out workers who are incompatible with others in his group and recommend their transfer to other groups, or their discharge. See p. 43.

Personal Problems Consultant.—The Personal Problems Consultant can often assist the worker to make the necessary psychological adjustments to enable him to work as part of a team and to approach his job with the right outlook. See p. 70.

Special Treatment for Women Workers.—Women workers often have difficulty fitting into a job designed for a man and have special problems of adjustment to fellow workers. See p. 78.

Low Wages.*—Wide experience indicates that the payment of a higher wage does not necessarily reduce labour turnover and absenteeism or increase productivity. This opinion is confirmed by Chart C, p. 88, which shows the relationship between labour turnover and earnings in 261 establishments. However, a combination of poor working conditions and low wages can result in high manpower loss.

Identification: Frequent worker complaints about low wage rates; general dissatisfaction among workers.

Remedies: *Incentive Plans.*—Incentive plans raise the worker's wages without raising management's costs and without demanding a greater expenditure of effort on the part of the worker. See p. 58.

Revised Hour Structure.—It is often possible to maintain the same level of production with a shorter working week. In such cases employees can be compensated for low wage rates by a shorter working week without any reduction in earnings. See p. 74.

Pension Plans.—By assisting the worker to save, pension plans promote the interest of the worker in the company. See p. 68.

Better Plant Housekeeping.—Pleasant surroundings increase the worker's pleasure in his work and compensate for low wages to some degree. See p. 36.

Wasteful Effort.—Even experienced workers often employ unnecessary movements in their work. Unsuspected profits often lie dormant here. A review of

methods and operations under the principles of motion study can do much toward realizing a fair day's output from a fair day's work.

Identification: Prevalence of fatigue among workers whose output is not above standard, and whose work has not previously been motion studied.

Remedies: *Motion Study.*—Motion studies often result in the elimination of wasteful effort. See p. 62.

Staff and Job Analysis.—By shifting workers from jobs which they are mentally and physically incapable of handling and replacing them with more suitable workers, greater output can be achieved with less individual worker effort. See p. 80.

Improved Foremanship.—Foremen can be trained to recognize when more effort is being expended on a job than is necessary and to make appropriate changes in job methods and staff. See p. 43.

Excessive Carelessness.—A certain degree of carelessness is inherent in all workers and cannot be eliminated. However, a large proportion of carelessness is due to thoughtlessness, low morale, and/or lack of understanding of the machine being used or the operation being performed and can be eliminated.

Identification: Higher accident rate than that of similar establishments; higher percentage of defective work; sloppiness in the work area.

Remedies: *Accident Prevention.*—Making a complete survey of the physical hazards of the plant and educating the workers to the importance of safety help to eliminate accidents due to carelessness. See p. 25.

Better Discipline.—Insistence upon observance of plant rules reduces carelessness and sloppiness and improves plant morale. See p. 31.

Improved Foremanship.—Foremen can be trained to recognize unsafe working habits and to impress upon workers the necessity for observing safety regulations. See p. 43.

PHYSICAL AND PSYCHOLOGICAL CONDITIONS WITHIN THE PLANT

Apathy and Frustration.—Workers who lack interest in their jobs or whose interest is dulled because they feel that there is little possibility of advancement cannot be fully efficient. These conditions can be caused by placing a worker on a job for which he is not suited, by failure to convince the worker that his value to the company is recognized by management, and by long-continued employment on the same job with no apparent prospect of advancement.

Identification: Lack of worker initiative; 'clock watching' and 'whistle beating'; numerous absences for no tangible reason; an unusual proportion of defective work; sloppy, careless working habits; need for frequent discipline.

Remedies: *Staff and Job Analysis.*—Changing a worker to a job for which he is suited and which he wants to do will often improve his attitude toward his work. See p. 80.

Aptitude Tests and Grouping of Workers.—Aptitude tests assist management to place workers on jobs for which they are mentally and physically equipped. See p. 28.

*A learner's wage which is unusually low relative to a trained employee's wage or to the prevailing starting rate in the area makes it difficult to attract workers and can also cause many learners to quit before finishing the instruction period. This increases training costs, wastes the time of skilled workers instructing green help and retards production. If starting rates are too low, management can apply to the Regional War Labour Board for permission to adjust them, and may themselves adjust them within an established range without reference to a Board. The manager of the local Employment Service of Canada can often give useful advice.

Improved Foremanship.—Foremen can reduce apathy and frustration by adopting a sound attitude towards the workers under them and by assisting those who are eager to advance themselves. See p. 43.

Better Discipline.—Fair and consistent discipline for all workers will improve their attitude towards their jobs and towards the company. See p. 31.

Personal Problems Consultant.—Much apathy and frustration is due to personal problems with which the Personal Problems Consultant will be able to assist workers. See p. 70.

High Proportion of Women Workers.—The presence of an increased proportion of women workers requires adjustment of plant conditions to meet the special requirements of women in industry. Plant housekeeping, treatment of workers, job breakdowns, general working conditions, safety precautions, and personal problems all require special attention when the proportion of women workers in the plant is high.

Remedies: *Special Treatment for Women Workers.*—See p. 78.

Better Plant Housekeeping.—Women are more sensitive to their surroundings than men. See p. 36.

Accident Prevention.—Women must be persuaded to wear the proper clothes and hair protection. Machines and processes must be explained to overcome their fear. See p. 25.

Aptitude Tests and Grouping of Workers.—Place women on jobs which they are mentally and physically capable of performing. See p. 28.

Revised Hour Structure.—Home responsibilities may demand a revision of working hours for women and special consideration should be given to women on night shifts. See p. 74.

Rest Pauses.—On some types of operations women require rest pauses more frequently than men. See p. 72.

Improved Foremanship.—Foremen must be trained to deal with the problems presented by the presence of women workers in their group. See p. 43.

Personal Problems Consultant.—The Personal Problems Consultant can assist women in adjusting themselves to industry. See p. 70.

Shopping Facilities.—Women's home responsibilities demand that they do a considerable amount of shopping and unless facilities are available they will be forced to take time off. See p. 76.

Day Nurseries.—Mothers of young children should not be expected to work outside the home unless adequate provision is made for the care of their children. Provision of day nurseries makes it possible to utilize the services of these women. See p. 39.

Improper Nutrition.—Peak production depends upon the fitness of the worker which cannot be maintained without regular, nutritious meals. Many workers do not have an adequate breakfast, bring unnutritious snacks in their lunch boxes, and buy the wrong types of food at the plant canteen.

Identification: High rate of sickness; abnormal sale of "low value" food by plant canteen; decline in output towards end of shift.

Remedies: *Improved Nutrition.*—Educate the worker to the benefits of proper food and provide facilities for obtaining nutritious meals at the plant. See p. 56.

Medical Services.—A doctor or dietician can detect the presence of improper nutrition and can conduct a program for improving nutrition. See p. 60.

Rest Pauses.—The worker should be given an opportunity to obtain nutritious snacks between meals to reduce fatigue. See p. 72.

Improper Ventilation and Temperature.—Frequent changes of air are essential to the health and efficiency of workers. Different types of work require varying temperatures.

Identification: Prevalence of headaches among workers; fatigue developing early in the shift; frequent colds.

Remedy: *Better Plant Housekeeping.*—This remedy includes a discussion of heating and ventilation in the plant. See p. 36.

Inadequate Lighting.—Illumination requirements vary with the type of work and the quality of vision of the worker. Lack of proper lighting conditions lowers a worker's efficiency and increases the danger of accidents.

Identification: Prevalence of headaches caused by eye-strain; high proportion of defective work, particularly on items calling for precision; low rate of production; abnormal fatigue, particularly of head and neck muscles, towards the end of the day; high accident rate even when normal safety measures are being observed.

Remedies: *Improved Lighting.*—See p. 50.

Medical Services.—Eye examination of workers suffering from frequent headaches and excessive fatigue will often reveal that lighting for their jobs should be improved or that some workers' output and efficiency can be increased by their wearing glasses. See p. 60.

Insecurity.—Steady employment and reasonably good wages will far more often attract and retain good workers than will highly paid jobs of uncertain tenure. The output of the worker who feels his position with the company is insecure may be seriously reduced by the mental and physical results of his worrying. Moreover, such workers will be anxious to leave the company to obtain positions where their security is greater.

Identification: High rate of labour turnover among efficient and stable workers; high rate of labour turnover after temporary layoff.

Remedies: *Pension Plans.*—Pension Plans reduce the worker's fear of insecurity by assisting him to save for his future and give him a greater interest in the company. See p. 68.

Sickness and Accident Benefits.—By reducing the worker's fear of the consequences to himself and to his family of prolonged sickness or disability due to an accident, sickness and accident benefits decrease the worker's sense of insecurity. See p. 76.

Incentive Plans.—By enabling the worker to increase his pay and by offering him a chance to prove his ability, incentive plans assure the worker that management will recognize his value to the organization. See p. 58.

Insufficient and Unsanitary Washrooms.—Lack of adequate, clean and easily accessible washrooms can seriously affect worker health and morale. Dissatisfaction among employees can also result from lack of adequate facilities for both men and women to change to clean clothes before leaving the plant at the end of their shift. These shortcomings will drive away the more desirable types of employees.

Identification: High rate of sickness; low worker morale; 'beating the whistle'.

Remedies: *Better Plant Housekeeping.*—This remedy includes a discussion of the necessity for providing good washroom and changing room facilities. See p. 36.

Monotony and Boredom.—If the worker is placed on a job below his mental and physical level or if his desire to do a workmanlike job is dulled by work set up in a haphazard or inefficient manner, the worker tends to become bored. Repetitive jobs must be carefully treated if they are not to become monotonous. Poor plant housekeeping and generally unattractive surroundings tend to produce monotony.

Identification: Rapid falling off of output during the final hours of shift; high percentage of defective work; listless and disinterested workers; workers 'soldiering' on the job; gossiping.

Remedies: *Aptitude Tests and Grouping of Workers.*—Place the worker in a job which is not below his mental and physical capacity. See p. 28.

Staff and Job Analysis.—A balanced staff is essential if mobile and junior executive types are to be in jobs equal to their ability. See p. 80.

Motion Study.—Job breakdowns which produce an efficient, precise operation stimulate the worker's interest in his job. See p. 62.

Improved Foremanship.—Foremen can be taught to realize the value of improved job breakdowns and can contribute to management's efforts to place staff properly. See p. 43.

Incentive Plans.—Incentive plans increase the worker's interest in his job. See p. 58.

Better Discipline.—Better discipline can increase the efficiency of a group and thereby stimulate the worker's interest in his job. See p. 31.

Better Plant Housekeeping.—Bright, attractive, and orderly working areas heighten the worker's interest and pleasure in his surroundings. See p. 36.

Music.—Music helps to overcome the effects of monotony. See p. 66.

Rest Pauses.—Breaks in the working spell help to overcome the monotony of long stretches of repetitive work and give workers a chance to obtain refreshment. See p. 72.

Recreation.—Providing the worker with an opportunity to obtain recreation improves his general well-being and helps to counteract the effects of monotonous working conditions. See p. 71.

Poor Plant Housekeeping.—Dingy, dirty and sloppy surroundings and inefficient or careless layout of work reduce the worker's interest and efficiency.

Identification: Poor plant housekeeping is generally apparent on even the most casual examination of the plant. "In process" components and materials stacked in the aisles, tucked into odd corners, strewn on the floor; tools lying about; dirty corners and refuse under the benches; disfigured walls; unclean smells and discarded dirty clothing all indicate poor plant housekeeping. The defects are revealed in listless, disinterested, and apathetic workers; low morale; high rate of sickness; 'beating the whistle'; and unexplainable fatigue.

Remedies: *Better Plant Housekeeping.*—See p. 36.

Improved Foremanship.—The foreman should be trained to realize that good housekeeping in his working area is a part of his responsibility. See p. 43.

Accident Prevention.—Sloppy conditions and poor plant layout may be a prime cause of accidents. See p. 25.

Medical Services.—Unsanitary and unhealthy working conditions can impair the health of the worker. The Medical Director can determine unhealthy conditions and suggest a program for their correction. See p. 60.

Special Treatment for Women Workers.—Women are particularly susceptible to the effects of unsuitable working conditions. Better plant housekeeping will enable the plant to attract more women workers and will increase the efficiency of those already on the staff. See p. 78.

Rules Violation.—Certain rules and regulations are essential to efficient operation. Factory rules should be kept to a minimum and should include only those which contribute to efficiency. Rules should be distributed and explained to all employees to avoid infractions with the plea of ignorance and to insure consistent application and enforcement. Otherwise the workers may accuse management of favoritism in the meting out of penalties.

Identification: Frequent necessity for disciplinary action; jealousy among workers; low morale; high accident rate.

Remedies: *Better Discipline.*—See p. 31.

Improved Foremanship.—Since the foreman is responsible for the enforcement of rules and regulations he should understand the reasons for the rules and the necessity for consistent application. See p. 43.

Accident Prevention.—Safety rules must be intelligently designed and strictly enforced if accidents are to be kept to a minimum. See p. 25.

Special Treatment for Women Workers.—Rules must be designed to meet the requirements of and the problems presented by women in industry. See p. 78.

Unaccustomed Prosperity.—When the workers' level of pay has increased beyond that to which they are accustomed and until they adjust themselves to the higher level of earnings, they are apt to take time off either to provide an opportunity to spend money or because they feel they can afford to miss a day's pay.

Identification: High rate of inexcusable absenteeism.

Remedies: *Better Discipline.*—Intelligently administered discipline impresses upon the workers the importance to them and to the company of regular attendance. See p. 31.

Pension Plans.—Company-sponsored pension plans and other types of savings campaigns stimulate the worker's interest in the company and encourage him to save a portion of his increased earnings. See p. 68.

PHYSICAL AND PSYCHOLOGICAL CONDITIONS OUTSIDE THE PLANT

Lack of Recreational Opportunity.—A reasonable amount of recreation is essential to the maintenance of employee efficiency and morale. Experience has shown that long hours of work with little opportunity for recreation or lack of recreational facilities can seriously reduce output.

Identification: Low employee morale; high sickness rate; numerous inexcusable absences.

Remedies: *Recreation.*—Many plants have found it feasible to sponsor sports and cultural activities for their workers. See p. 71.

Revised Hour Structure.—The working week should be so arranged that employees will have opportunity for recreation. See p. 74.

Rest Pauses.—Rest pauses provide an opportunity for employees to relax and to enjoy certain types of recreation. See p. 72.

Transportation.—Helping workers to shorten the time spent travelling to and from the plant will increase opportunities for recreation. See p. 85.

Night Shifts.—Special attention must be given to the problems of workers on night shifts if their production is not to fall below an economical level.

Remedies: *Revised Hour Structure.*—Consideration should be given to the possibility of eliminating night shifts. If this is not possible, the length of the night shift should be reviewed and, if necessary, shortened. The time between the rotation of shifts should be such that the worker becomes adjusted to the shift on which he is working. See p. 74.

Staff and Job Analysis.—Careful selection of personnel for night shifts is essential as some workers are physically or mentally incapable of adjusting themselves to night work. See p. 80.

Rest Pauses.—Rest pauses are especially important to the efficiency of the worker during the night shift. See p. 72.

Improved Nutrition.—It is more difficult for night shift workers to obtain nutritious meals. If possible, the plant should provide night shift workers with facilities for obtaining hot meals and snacks. See p. 56.

Improved Lighting.—Artificial lighting values adequate during the daytime hours may prove insufficient for night shift operations. See p. 50.

Special Treatment for Women Workers.—Normally, women should not be employed on night shifts. However, if their employment is necessary, special consideration should be given to their problems. See p. 78.

Transportation.—Night shift workers are usually faced with a serious transportation problem. See p. 85.

Personal Problems.—Many of the problems responsible for manpower loss are of a personal nature and this loss can be reduced if management gives consideration to problems of this type.

Identification: Absences for reasons other than true sickness; 'whistle beating'; lack of attention to work.

Remedies: *Personal Problems Consultant.*—A qualified personal problems consultant can often assist workers with their personal problems or relieve their minds by giving them a sympathetic audience. See p. 70.

Medical Services.—Workers with personal problems will often confide in the doctor or nurse, who can frequently assist them to meet their problems. See p. 60.

Shopping Facilities.—Many workers have difficulty in doing necessary shopping or keeping appointments for personal services. See p. 76.

Special Treatment for Women Workers.—Since women usually have responsibilities outside the plant and since their nature makes them more subject to personal problems, special attention should be given to assist them to meet their problems. See p. 78.

Poor Health.—In addition to causing a high rate of absenteeism, poor health can be responsible for low worker output and morale.

Identification: Decrease in worker output for no apparent reason; frequent minor ailments; apathy and low morale.

Remedies: *Medical Services.*—The plant doctor or nurse can keep a continuing check on all workers, examine applicants before they are accepted, and discover the existence of poor health before its effects result in active sickness. See p. 60.

Revised Hour Structure.—Too long a working week may reduce the general level of health of the workers and lower their resistance. See p. 74.

Improved Nutrition.—Education of the worker to eat the correct food and provision of facilities in the plant for him to obtain nutritious meals and snacks can materially improve his health. See p. 56.

Improved Lighting.—Correct illumination assists in eliminating eyestrain, and fatigue due to eyestrain. See p. 50.

Better Plant Housekeeping.—Provision of clean, sanitary working conditions, clean and adequate washrooms, and proper ventilation and temperature can improve the health of workers. See p. 36.

Recreation.—A reasonable amount of recreation is necessary for continued good health. See p. 71.

Poor Housing.—Unsatisfactory living conditions affect workers' health and morale and may cause the worker to seek employment in other districts where adequate housing is available.

Identification: Frequent complaints from the worker about housing conditions; high rate of labour turnover caused by workers moving to other districts.

Remedy: *Personal Problems Consultant.*—The Personal Problems Consultant can often assist workers to obtain suitable housing. See p. 70.

Poor Transportation.—Travelling long distances on crowded streetcars and buses getting to and from work tires the worker and reduces his efficiency during the working spell. It also shortens the worker's free time which he would normally devote to relaxation, recreation, or personal business. Its effects are particularly serious among women and night shift workers.

Identification: Fatigue early in the shift; tardiness; 'whistle beating'; 'clock watching'.

Remedies: *Transportation*.—There are various ways in which management can assist workers to solve their transportation problems. See p. 85.

Shopping Problems.—These problems are particularly significant when there is a large proportion of women workers in the plant as their home responsibilities demand that they do a considerable amount of shopping. Men may also find it difficult to obtain time to attend to necessary shopping and both men and women require time to obtain personal services.

Identification: Many absences for personal reasons; tardiness; and 'whistle-beating'.

Remedies: *Shopping Facilities*.—There are various ways in which management can assist workers to solve their shopping problems. See p. 76.

Special Treatment for Women Workers.—Management should give women's shopping problems special attention. See p. 78.

Transportation.—Management can assist workers to obtain time for shopping and personal services by helping them to reduce the time spent going to and from the plant. See p. 85.

Unavailable Day Nurseries.—This is a special aspect of the problem of women in industry and is only a cause of manpower loss in those plants employing a high proportion of women workers. Mothers of young children should not be expected to work outside the home unless adequate provision is made for the care of their children.

Identification: High absenteeism, labour turnover, and tardiness among women with children.

Remedies: *Day Nurseries*.—The Dominion Government in conjunction with some provincial governments has provided day nurseries for the children of working mothers. Some welfare organizations also offer this service. See p. 39.

Personal Problems Consultant.—The Personal Problems Consultant can often arrange for the care of the children of the working mother. See p. 70.

SECTION VII

REMEDIES

This Section sets out *suggested* remedies which have proved of value in various plants throughout the industrial field. Whether they will be applicable depends on the specific conditions prevailing in a plant. For this reason no attempt has been made to weigh their relative value.

It is freely admitted that there are plants which have instituted many of these remedies but still suffer from excessive manpower loss. This should not be interpreted as invalidating the contention that by applying tested remedies management can substantially reduce manpower loss in individual plants. Rather, it should serve as a caution to management to ensure that the remedies are adopted and applied in accordance with the

fundamental principles which, in all cases, condition the success of a program to reduce manpower loss. These principles are that:

The attitude of management must be such as to win the confidence of labour and ensure labour's co-operation in the steps which are taken to improve labour productivity;

The basic causes of manpower loss must be diagnosed correctly and their relative importance properly assessed;

Suitable administrative machinery must be established;

Remedies must be carefully selected and intelligently applied.

ACCIDENT PREVENTION

A Remedy for the Following Basic Causes

Foreman Mismanagement
Excessive Carelessness
High Proportion of Women Workers
Poor Plant Housekeeping
Rules Violation

Far Reaching Effects.—In many plants management is suffering a heavy manpower loss as the direct result of accidents. Moreover, since accidents have an adverse effect on the morale and productivity of all workers and since a 'high-accident' reputation for a plant will deter the inflow of desirable labour, an additional loss will occur in such cases.

Management's Responsibility.—The fact that there is variation in the accident rate between establishments in the same industry and that many cases of successful preventive plans are reported clearly indicates that management is able to reduce an abnormally high accident rate. It is a direct responsibility of management to take action towards this end. If, in spite of efforts on the part of management, the accident rate does not decline, it may be due to management's failure properly to diagnose and remedy the basic causes of accidents.

Finding Basic Causes.—Since there are many factors that contribute to accidents, the problem of prevention may be complex. Apart from the presence of undisciplined employees and the lack of mechanical safety devices, fatigue, low morale, and the attitude of management to the employees contribute materially to accidents. These in turn result from a number of basic causes. Any one, or a combination of the twenty-seven basic causes may be the underlying reason for a high accident rate. The approach to isolating the basic

causes requires the application of a similar technique to that used in determining the basic causes of absenteeism, labour turnover, etc.

On p. 26 of this Section is given a list of physical conditions that should be checked in an establishment. Also included in the list are certain psychological factors which often induce accidents. It is this latter group that management must carefully review if the cause is not found among the physical faults listed. Accidents are frequently recorded as being caused by 'inattention', 'carelessness', 'wool-gathering', 'sloppiness', or 'stupidity'. These are evidences, not basic causes of accidents. The real basic causes may prove on isolation to be susceptible to treatment.

The Mental Aspect is Important.—Any one of many real or imaginary worries or illnesses may distract the worker's mind and cause an 'unexplainable accident' through a temporary lapse of an otherwise careful and skillful worker. Accident prevention plans should come under the purview of the Labour-Management Round Table and any campaign should be a co-operative effort on the part of both worker and employer. In this regard, it is significant to note that in plants having a high standard of industrial relations there is usually a lower than average accident rate.

A Square Peg in a Round Hole.—Distinct from temporary distraction is the accident hazard from a worker who is not suited to his job. This may mean that through poor co-ordination, faulty vision, or sub-standard intelligence the work is too difficult or exacting for the employee, and in trying to work beyond his capacity he is likely to suffer an accident. Probably even more important is the misplacement of a worker who, while easily mastering his work, becomes bored with its repetitive or monotonous nature and so has

difficulty in maintaining the necessary degree of concentration. The transfer of this type of worker to tasks for which he is suited will reduce the accident potential of a plant.

The Careless Worker and the Show-off.—Finally, there are those workers who are normally slovenly and careless, have a tendency towards 'horseplay' or deliberately disregard safety appliances and rules. In such cases prompt disciplinary action is necessary. Where a Labour-Management Round Table exists the 'careless' or 'show-off' worker may be most effectively disciplined through the worker's Labour-Management Round Table representative, his fellow employees being charged with the responsibility of disciplining the culprit.

A Check-List of Conditions Which May be Causing a High Accident Rate.—As management must assume responsibility for a high accident rate, it should consider all the influences that may be directly or indirectly causing injuries. Since domestic and financial worries, shopping, housing and transportation problems, etc. may be important factors, it will be seen that management's interest includes not only conditions in the plant but also conditions affecting the worker after plant hours. It is recommended that all phases of accident causes be examined. There are, of course, certain plant conditions that inevitably lead to a high accident rate and these should be checked before exploring the less obvious possibilities.

Physical Conditions in the Plant—

- Inadequate safety devices
- Unsafe methods and layout
- Congested work areas
- Poor lighting
- Poor plant housekeeping
- Lack of rules for safe operation
- Inadequate equipment
- Inadequate maintenance of equipment

Supervision and Training—

- Lack of induction procedure
- Lack of training and supervision
- Improper placement and teaming of workers
- Switch over to women in plant

Clothing and Personal Protective Equipment—

- Inadequate protective clothing
- Safe clothing for women
- Safe clothing for men

Psychological Conditions in the Plant—

- Low morale
- Abnormal fatigue

Conditions Outside the Plant—

- Domestic or financial worries
- Shopping and transportation difficulties
- Poor health.

REFERENCES

In approaching the problem of safety *The National Safety Council* (U.S.A.) suggests that consideration be given to the following: The initial job of the man in charge of safety is to conduct analysis of plant accident

reports and records. This analysis should bring to light the salient facts. Departments should be rated according to their accident experience, thus giving a clue to where corrective efforts should begin. In addition, conditions, agencies, and practices causing accidents are found, and hence, immediate steps for the prevention of accidents may be taken. Also the weak and strong points of certain foremen and supervisors as they relate to accidents are found. As a result, when additional education in safety is indicated, the safety man knows where to direct his efforts. Individual workers suffering repeated injuries are discovered. With this information available, the safety man may determine the causes of these accidents, whether due to physical handicaps, wrong mental attitude, or lack of training or skill. Too much emphasis cannot be placed upon organizing and maintaining a complete injury reporting system. To the safety man, the use of plant accident statistics can be as valuable as the cost sheet to the production man. After plant safety records have been analysed, a periodic plant inspection should be made. Intensive efforts should be made to secure and retain the wholehearted co-operation of workers in the safety programs by the use of practical schemes that arouse their interest and desire to co-operate. The selection and placement of workers is an important factor in controlling accidents, since many accidents have occurred because workers have been placed on jobs for which they are physically and mentally unqualified. Efficient and thoughtful supervision reduces accidents, since workers under lax supervision are apt to take chances, to use short cuts, and to remove guards. Plant safety committees are effective in arousing interest in safety among the workers. In the organization of safety committees, the National Safety Committee, United States, recommends that there be three. First, a general safety committee composed of an executive, the man in charge of safety, a foreman and a worker. Second, a foreman's committee composed of foremen and workers. Third, an inspection committee of a foreman and two workers who make tours of the plant at regular intervals inspecting all hazards.

CASE HISTORIES

Quoted from "Factory Management and Maintenance", January, 1944.

Every effort is made at *Bigelow-Sanford Carpet Company, Inc.*, Thompsonville, Conn., to make every employee take an active part and a continuing interest in safety. The safety program is headed by a safety committee. All safety equipment and working methods which might be considered unsafe, as well as good housekeeping methods, are studied by the department safety committees, and prompt reports are submitted to the safety inspector, who then makes the necessary recommendations.

Because this company is the largest in the community, it has been found helpful to work closely with the schools, so that the idea of safety in the plant, at home, or on streets is brought to future employees. From time to time the company awards cash prizes for the best essays on safety. The school safety patrol is invited to the plant and conducted through every department, where the children can observe actual working conditions and the safe-guarding of machines, and thus gain a knowledge of what safety means in an industrial plant.

The safety program in plants of *General Motors Corporation* is based on a six-point plan established by C. E. Wilson, President:

- (1) Interest in safety on the part of top management.
- (2) A definitely established safety organization through the supervisory organization to each employee.
- (3) Adequate and capable full-time safety personnel.
- (4) Written safety procedure and instructions for each occupation.
- (5) Thorough safety instruction of new employees.
- (6) Stimulation of interest on the part of every employee.

Much emphasis is placed on the part played by the supervisory force, definite safety duties of foremen and assistant foremen have been set down:

To understand fully the general safety policies of the division.

To be responsible for safety guards and safety devices in their departments; to write out all orders for safety guards and appliances; to follow up and see that the guards are installed; to consider that the supervision of safety in their own departments is one of their major responsibilities.

To talk to at least two of his employees every working day on the subject of safety. The time spent with each employee should not be less than five minutes. Therefore, every foreman and assistant foreman will spend at least ten minutes every working day in giving safety instructions to individual operators. A record of these individual talks shall be kept in the department on cards provided by the safety director. The method of recording their talks will be set up by the safety director. The most important part of the entire safety program, so far as the foremen and assistant foremen are concerned, is the regular day-to-day discussion of safety with individual operators on the manufacturing floor.

To promote safety by attention to safety posters, special safety movies, etc., as opportunity affords. It is not intended that the safety program shall centre particularly around safety posters, safety movies, etc. These are only incidental, it being understood that the most effective means of promoting safety is by consultation with individual operators.

To instruct new operators in safety. This is in addition to the instructions to new operators by the safety director, prior to reporting to the department for work. In particular, to instruct all new employees as to proper operation of equipment on the job.

To instruct all old operators transferred to the department as to the proper operation of equipment on the job.

To recognize that safety is as truly a part of the job as production schedules, labour relations, etc. A good foreman or assistant foreman works daily on safety problems the same as on production problems.

There is no better way to learn than to teach. This creed served as the basis for safety instruction to new

workers—many of whom had no prior industrial experience—in an ordnance plant operated by *Westinghouse Electric & Manufacturing Company*.

The safety lesson begins when the employee is hired. Safety shoes and goggles are fitted during the employment procedure. Safety instruction booklets are given employees for study.

Each shift is arranged so that one-third of the trainees are new employees. The other two-thirds are encouraged to teach safety rules to the newest members of the classes.

Ten per cent of the newest trainees are placed on the safety committee of each shift. Regular weekly meetings are held to make recommendations for eliminating hazards. Each trainee is requested to watch for safety rule infractions on the part of his neighbour. Particular attention is paid to workers' clothing. Because of this constant emphasis, trainees taking their places in regular production are as fully trained in safety as in their trades.

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APTITUDE TESTS AND GROUPING OF WORKERS

A Remedy for the Following Basic Causes

Foreman Mismanagement
Incompatibility With Job or Fellow Workers
Apathy and Frustration
High Proportion of Women Workers
Monotony and Boredom

Importance of Fitting Worker to Work.—To obtain the maximum amount of productive energy from an individual worker, it is essential that he be engaged upon work for which he is particularly trained or upon work in which he shows promise. Not only does high individual productivity directly benefit the plant's operation as a whole through lower costs and greater output, but it helps indirectly through the improved industrial relations and higher morale that spring from the individual worker's satisfaction in knowing that he is performing his job well.

Function of Aptitude Tests.—To fit a worker into the proper type of job, numerous aptitude tests covering intelligence, mechanical, and clerical ability have been devised. Aptitude tests should not be confined to the hiring of new labour; they are equally important in any plant's system of upgrading and can also serve a useful purpose in the re-arrangement of job assignments so often necessary to attain peak efficiency.

Selection of Tests.—The selection of the proper type of tests and the method of conducting the tests are of the utmost importance and, wherever possible, management would be well advised to obtain expert advice both on selection and the initial supervision of the tests.

Aptitude tests fall under three main headings: Intelligence tests; Mechanical tests; Clerical tests. In turn each of these groups is broken down into various types covering different fields of work and different levels of efficiency. For example, a mechanical test to find suitable workers for a job requiring nothing more than finger dexterity would be entirely different from a test designed to find workers with advanced mechanical ability.

The selection of the test, therefore, depends upon the requirements of the job to be filled. Once these requirements are determined, the advice of an expert can be obtained or management can consult with other industrial establishments which have successfully applied aptitude tests for similar problems. Again, as a further alternative, it should be possible for a few small companies to co-operate and share the expense of expert direction and supervision.

Interpreting Value of Aptitude Tests.—The real value of aptitude tests lies in the interpretation of the testee's score. For example, it would be a mistake if an employee who gained an excellent score on mechanical tests and at the same time passed the intelligence test with above average marks were scheduled for monotonous mechanical labour, since, with his more than average I.Q., there will be a tendency for him to become bored and disinterested in his work once the initial novelty has worn off.

For this reason, the examiner should be someone who knows not only the requirements of the job to be filled but one who has had successful experience in the handling of personnel. Moreover, the examiner should either be coached by an expert on the fundamentals of proper interpretation or given an opportunity of gaining this knowledge by first-hand experience in tests conducted by other establishments.

An Aid to a Good Employment Office—Not a Substitute.—Aptitude tests are intended to be a guide only to a person's adaptability and in no way do they dispense with the necessity of efficient personnel direction. They do, however, materially assist the employment office in placing the right people in the right jobs, thereby increasing the efficiency of the plant as a whole.

Value in Proper Teaming of Workers.—Apart from providing a guide to a person's adaptability, aptitude tests are also valuable in the grouping or teaming of workers. An employee who, in his mechanical tests, shows promise of becoming a fast and efficient worker, should be teamed with workers of the same calibre rather than with slower or less efficient operators. Similarly, employees with equal I.Q. ratings should be grouped together, since workers of the same mental level are apt to develop into the most productive working team.

Better Teaming Possible Without Tests.—Efficient grouping or teaming of workers can play a big part in attaining peak efficiency within a plant and, even without resorting to aptitude tests, management can accomplish much by making frequent checks to ascertain that workers of similar efficiency are grouped together.

One slow worker in a group of a dozen or so can slow down the output of the whole group. Where this occurs the slow worker should be placed on a slower team and his place taken by a more proficient operator. This will speed up the output of the faster team and will not tend to decrease the output of the slower workers.

Peak production depends largely on good teamwork and this is impossible without harmonious relations existing within groups of workers. Every effort should be made to see that workers on each team get along well with each other. If it becomes obvious that certain workers are disliked by their fellows, the offenders should first be interviewed by the Personnel Relations Officer, since it is possible that some petty grievance, which can be easily remedied, may be causing the friction. In cases of distinct personal dislikes and animosities, it would be well to transfer the offenders to other teams.

Assistance from Labour-Management Round Table.—In regard both to aptitude tests and the teaming of workers, Round Table discussions between management and labour will be found of high value. The actual experience and observations of the worker representation will encourage practical suggestions towards improved application of both measures.

Practical Approach to the Problem.—Because of the great diversity existing between the needs of various establishments, it would be pointless to suggest any procedure in this text. The course that is recommended to management is that it peruse the attached case histories and review the literature listed hereafter, with the object of locating information on the tests and experiences of others most apt to apply to the particular activities of the plant under review.

CASE HISTORIES

Quoted from "Factory Management and Maintenance", December, 1943.

Woodward Governor Company, Rockford, Illinois, set up a series of tests to help select and place people where their knowledge, aptitudes and ability may be used to the best advantage of company and employee.

The first is a general intelligence test. The company norm has been found, and many applicants are weeded out, although high standing is not necessarily a requisite for employment in the company.

The second of these tests is a mechanical intelligence test which measures rather general mechanical knowledge. For instance, a man who has done no more than tinker around in his basement or on his car may be able to do quite well on it.

Next, the applicant is given a mechanical test which does not depend upon his knowledge of mechanical aptitude. For example, he may have to work out a system of pulleys on paper.

Each applicant now fills out a form which shows his training, previous experience and education. These forms are checked over carefully along with the scores he has made on the tests he has taken so far, keeping in mind the jobs that are open at the time. If his qualifications are adequate, and he is interested in the job that is available, he is given some more tests. An applicant with several years' experience in a machine shop is given a test made up of questions relating to the types of work he has done. If he has had experience in precision work, he takes a test of precision measurement requiring readings to the nearest tenth of a thousandth. And he may be given a test to measure co-ordination, or what Woodward calls "machine skill". For this test, a pencil, controlled by two cranks turned

at different speeds and in different directions, follows patterns on a paper. Both speed and accuracy are counted.

The second part of the test of machine skills involves turning one crank and, with the pencil, following lines on a revolving drum. A person with some experience on turret lathes should grasp this easily and do very well. It is a good test of hand-and-eye co-ordination. The number of these tests an applicant takes depends upon what training and experience he has had, and what type of work he wants.

A test is also given to measure the applicant's self-control and level-headedness. The test is of great help in eliminating undesirable applicants and in placing workers in the jobs best suited to their temperaments and abilities.

In addition to these tests, the applicant may be given a simple mathematical test and a short test of what is called technical intelligence, which involves visualizing blocks in three dimensions.

Women are given some of the same tests as the men. In addition to the intelligence, mathematics, and technical intelligence tests, they are given short inspection tests which involve crossing out only the circles found in row upon row of various figures, and crossing out only one of a certain number in a series of numbers. If they are interested in machine work, they may be also given the machine skill tests the men take. With women as well as with the men, the number of tests they take depends upon training and experience, what positions are open at the time, and the type of work they are interested in.

These tests have been used since 1938, and the management of Woodward Governor is convinced that they are of inestimable value to the organization, not only for their value in finding the right man for the job but also in the shifting and upgrading of men in the shop.

Martin & Schwartz, Inc., Salisbury, Maryland, testing program is the same for men and women. It consists of three parts—preliminary screening test, mechanical comprehension tests and three apparatus tests, which include the two-hand co-ordination, hand-eye co-ordination and hand-tool dexterity tests.

The preliminary screening test is essentially an intelligence test, but all items are built around the industrial situation and concern topics familiar to the average shop man and woman. Part Two of the test is non-verbal and has been included for the purpose of obtaining a fairer measure of the mental ability of the individual who has been out of school for a number of years and has become accustomed to work in the realm of things rather than with the written page.

Of the five areas usually included in intelligence tests—ability to follow directions, reasoning, arithmetic, vocabulary and general information—the preliminary screening test is concerned with the first three only. The overall time limit of the test has been purposely kept to a minimum of twenty-three minutes to facilitate the hiring procedure at the time of initial selection.

This form is most useful as a rough classification test at the time of the initial selection. In general, applicants scoring below average on the test are most suitable for low-level, routinized tasks, while those obtaining higher scores represent potential material for upgrading to jobs of a higher level.

Mechanical comprehension tests are designed to measure the capacity of an individual to understand various types of physical relationships. One form is suitable for male high school students and engineering students or adult men. The other is designed to supplement earlier ones for use with women. Experience and education have an appreciable influence on scores. No time limit is used. Thirty-five minutes should ordinarily be sufficient, and many applicants take considerably less.

The apparatus tests are designed to measure manual dexterity and co-ordination, as the names imply (hand-eye, two-hand, and hand-tool). Before starting each test, the applicant is given verbal instructions as to just how to proceed. Each person is timed, the time is recorded and then combined with the other scores to give the final rating.

This testing program has aided immensely in securing the higher type of employee. The tests are of sufficiently low level of difficulty to allow differentiation between the applicants with very low scores and people on the higher level. Those in the lower brackets represent, of course, a liability to a company even for simple jobs. And those with higher scores, even though it is difficult to differentiate between people on the higher level, are an indication of trainability for more complex jobs.

AC Spark Plug Division of General Motors Corp., Flint, Michigan, considers that aptitude testing is a part of good personnel procedure. It is preceded by careful job analysis and closely correlated with employment interviewing. It does not, in this company's opinion, eliminate the need for sound training after the employee has been hired; nor does it take the place of good supervision.

Aptitude tests are samples of behaviour which are related to success, but do not wholly determine success. Unlike school tests, which are intended to measure achievement, aptitude tests are designed to measure potential skills and talents. Tests used at AC Spark Plug cover the fields of mechanical comprehension, manual manipulation and dexterity, sense of spatial relations, visual perception, and ability to learn. Inventories of technical or trade information are used where indicated.

In evaluating its testing program, the company is not concerned with perfection but with the extent to which the results show improvement over methods that have preceded it. It is important that all tests be carefully verified, through research, to make sure they are suitable for selecting workers for the occupation in question.

Two methods are followed in studying the validity of tests for a specific occupation at AC Spark Plug Division of General Motors, Flint, Michigan. One, reports Orlo L. Crissey, educational director, consists of testing a group of employees who are working at the job for which the tests are being standardized and correlating the test results against criteria of success in this occupation. This approach pre-supposes a careful job analysis so that the proper tests may be selected to measure the essential aspects of the job under consideration.

The second approach may be thought of as the follow-up method. Here, too, a group of tests or a battery of tests are selected, based on a study of the job requirements, and a group of new employees are

tested when hired. Later a study is made of the relationships between the test results and the success of the workers on the job after they have had an opportunity to develop the necessary skill.

An illustration of the first method of studying test validity is the study of job setters, which was begun two years ago when a group of set-up men were given a series of group and individual tests. The apparent requirements of the job had been analyzed. In addition to paper-and-pencil tests and several well-known apparatus tests of so-called mechanical aptitude, two additional pegboard tests were devised to measure uni-manual and bi-manual dexterity. Since there were no production records against which the test results could be checked, the job setters were rated by supervisors with regard to success and ability in their work. From among the tests given it was possible to select a battery that successfully indicated which men were in the best and poorest thirds of this group. A later study has confirmed the predictive value of the tests in selecting for this type of job.

An example of the follow-up type of test validation is in progress at the present time on a group of women who are assembling precision parts for the automatic pilot for planes. Certain tests were selected to give to a group of girls being placed on this job. After sufficient time had elapsed for them to develop considerable skill, they were rated as to mechanical efficiency by their supervisors. The test results were then studied to see which tests were valid in picking out the successful operators. As a result, certain tests—mechanical assembly, tweezer dexterity, bi-manual dexterity, and intelligence—were identified as those in which most of the successful operators received scores falling in the upper range.

The results of these and other studies are now being applied in the selection of women employed as operators and inspectors on the automatic pilot and other units. All spark plug gappers are selected by tests, as are the majority of spark plug assembly operators and inspectors. Among male employees, tests are given to prospective set-up men, machine operators, screw machine learners, upgraded machinist apprentices, and inspectors.

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BETTER DISCIPLINE

A Remedy for the Following Basic Causes

Foreman Mismanagement
Excessive Carelessness
Apathy and Frustration
Monotony and Boredom
Rules Violation
Unaccustomed Prosperity

Employee Discipline Must be Enforced.—Intelligently administered employee discipline is a vital charge of the employer and is essential for efficient operation, since poor discipline results in constant unrest and leads to low employee morale.

A New Concept of Disciplinary Methods.—Forward thinking management, while in accord with the necessity for good discipline, is currently revising methods of its application. True discipline can only be maintained where the workers understand the reasons for the regulations and believe in the fairness of their administration. Given this understanding, the majority of the workers will adhere to regulations and co-operate in administering the procedures. Adequate discipline can be developed through educating the worker to the reasons for regulations and procedures not only as they affect his own effort but also as they affect the part his work plays in the collective activities of the plant. Since a number of workers are usually affected by all regulations and procedures, standardized procedures and regulations must be drawn up in the light of the greatest benefit for the majority of workers.

Although exceptions will have to be dealt with, individual conditions must be subjected to interpretation under the general regulations. Clear, comprehensive, and reasonable factory rules are the basis of equitable, uniform, easily administered and, from the point of view of the employee, acceptable discipline. Presentation of the factory rules to the employee as one of the conditions of his employment and insistence on mutual adherence by the company and the employee will go far in avoiding misunderstanding and, hence, friction between management and labour.

On p. 32 a number of factory rules are presented as a rough guide in reviewing existing rules; modifications in them being necessary, of course, to suit the individual company's needs.

Rules Should be Published.—Ignorance of the rules and favouritism are minimized through the publication and posting of rules and penalties for their infraction. If plant rules and penalties for their infraction have not been published, it is suggested that they be drawn up and submitted for approval to the Labour-Management Round Table before formal publication.

The initial draft should include generally acceptable rules governing working hours, thievery, drunkenness, sabotage, etc. Later, rules which are apt to be less readily accepted by the staff can be added. Since the workers are offered an opportunity to discuss proposed rules through the Labour-Management Round Table, they are obligated to support the rules which they have approved, a procedure which should lead toward self-discipline by the workers.

Many companies present the new employee with a booklet describing the origin of the company, policy, products, markets, and general benefits accruing to the employee. These companies have found that this is an effective method of introducing the employee to the things which he will need to know about the company as well as things that he will want to know about the company. The inclusion of factory rules in such a booklet gives the employee detailed information about what the company expects of him and what he can expect from the company.

Real Cause of Rule Infraction May be Obscure.—Experience has shown that, although the majority of workers abide by regulations promulgated under these circumstances, infractions are sometimes frequent. The use of good judgment and understanding in the handling of offenders contributes materially to harmonious industrial relations. Because of the complexities of human behaviour it is not safe to assume that the evident cause of a rule's infraction is the basic cause. Many circumstances may contribute to the misdemeanour of an individual who is normally amenable and co-operative. Thus, in considering the infraction and penalty to be imposed, management should try to determine the possibly obscure, basic cause of the infraction before attributing it to the worker's deliberate non-conformity. These basic causes may include any of those referred to in Section III and in particular:

Improper ratio of worker types
Improper teaming of workers
Foreman mismanagement
Apathy and frustration
Conditions inside the plant
Home circumstances and conditions.
Poor health
Excessive fatigue

Imposition of Penalties.—Some companies are removing the authority to impose penalties from the foreman and investing it in committees consisting of representatives of labour and management with the object of insuring that offenders are treated with consideration, fairness, and uniformity. In addition, the

worker is assured fair treatment and the foreman is not embarrassed by a possible reversal by top management in case the worker appeals the foreman's decision. In smaller plants the Personal Problems Consultant may perform the same function as the discipline committees in larger plants. He must, however, ensure that the employee's viewpoint is considered and that he makes decisions and administers penalties without prejudice.

FACTORY RULES

Introduction

1. The following rules and regulations are issued by the Company for the guidance of its employees.
2. Printed copies of these rules are posted throughout the Works and a copy is furnished to each employee.
3. Acceptance of employment in the Company's service implies acceptance of all its rules and regulations. Ignorance of its rules and regulations is not accepted as an excuse for violations.
4. The Bulletin Boards are the official means of communication with employees. Notices affecting employees are posted on these boards.
5. Additions to and changes in the Company's rules are posted on the Bulletin Boards.

General

6. The Company expects all employees to work for its best interests and to retain in confidence whatever knowledge they may acquire of its business.
7. The sale of tickets, the circulation of subscription lists, and the solicitation of contributions are prohibited. The sale of tickets for forms of entertainment which are approved in writing by the Personnel Officer is permitted on the Company's property only during other than regular working hours.
8. Agents or solicitors shall be referred to the Clerical Superintendent and are not permitted within the works.
9. The Company has adopted a plan covering benefits accruing to employees after a certain number of years of service. These benefits include Pensions, Disability Benefits, and Death Benefits. Full details are given in a pamphlet entitled "Plan for Employees' Pensions, Disability Benefits, and Death Benefits," which is distributed to all employees.

Hospital

10. A hospital is maintained by the Company where, in case of accident or sudden illness, employees will be treated free of charge. The hospital is located on the floor of building
11. Any employee requiring medical or surgical treatment shall secure a pass (Form) from his Department Chief before proceeding to the hospital.
12. The Company does not accept any bill for services rendered an employee on account of an accident or sickness unless such expense is authorized in writing by the Medical Supervisor in advance of the incurrence of the expense.
13. All employees becoming ill on the Company's premises or on being injured on the Company's premises shall report to the Medical Supervisor immediately in accordance with Section 11 above.

Restaurant

14. The Company operates a restaurant which is open to all employees. The hours are from ... a.m. to ... p.m. and from ... p.m. to ... p.m. during week days except Saturday when the hours are from ... a.m. to ... p.m. Employees shall not enter the restaurant except during their authorized lunch period and rest periods.

Use of Grounds for Athletic Games

15. Employees may make use of the Company's athletic grounds outside their working hours at will. Employees may make use of the Company's sports and game equipment outside their working hours at will providing such equipment is properly checked out and in with the Sports Supervisor.

Conduct

16. Walking on railroad tracks, except at recognized crossing points, is prohibited. Employees are cautioned against crossing the tracks of the Railroad Company. The railroads have notified us that they will treat all persons found upon their property as trespassers. The Company waives all responsibility for any injury caused, or suit brought against its employees, on account of any disregard of this caution. Sidewalks and recognized paths shall be used at all times.

17. Employees shall not ride on any engines, cars, auto trucks, or cranes, unless employed in their operation.

18. Sitting in windows is forbidden.

Working Hours

19. Regular Hours for employees except where special arrangements are made are as follows:

Monday	{	.... A.M. to Noon
to		
Friday	{	.... P.M. to P.M.
Saturday		.... A.M. to Noon

20. Rest pauses are allowed from A.M. to A.M. and from P.M. to P.M.

21. Whistle signals shall denote as follows:

	Preliminary warning denoted by One Long Blast	Starting time denoted by Two Long Blasts	Stopping time denoted by One Long Blast
Monday	{	.... A.M.	.... Noon
to			
Friday		.... P.M.	.... P.M.
Saturday	{	.... A.M.	.... Noon

22. The noon hour and rest pauses shall be taken at the stipulated times unless an authorization is made in writing by the employee's Department Chief and the authorization is filed with the Pay Roll Department.

23. The time for starting or stopping work refers to the actual time in the department and *not* to the ringing of the time-clock. Employees are expected to be at their places of work at the time given for starting and stopping.

24. Other than Regular Hours are assigned to certain occupations. An employee is instructed regarding these hours when assigned to such an operation.

25. Salaried employees working hours (.... hours in the case of female employees) after the Regular Hours on any working day or hours on a Sunday or a regularly authorized holiday are allowed a meal in the restaurant to the value of \$.... on presentation of

an Overtime Pass and Supper Voucher approved by the Department Chief. If the restaurant is closed, the employee receives credit on the payroll for \$....

Use of Washrooms

26. Employees are entitled to one break not exceeding minutes in the first half of the shift and the same in the second half of the shift to proceed to the washrooms only if the foreman has been given notice of intention.

Attendance

27. An employee wishing to leave the department during working hours, or at noon, not intending to return that day, shall first obtain written permission from his Department Chief by having the Department Chief complete Form which shall be forwarded to the Pay Roll Department.

28. Absences should be arranged for in advance. In case of inability to report for work the Department Chief should be notified as early in the day as possible.

29. On returning from an absence of any nature the employee must report to the Personnel Officer when instructed to do so by his foreman.

30. Employees are expected to be regular in attendance. Failure to be regular in attendance is considered cause for dismissal.

31. An employee who is late for work must report to the Personnel Officer when instructed to do so by his foreman.

32. Employees intending to leave the service of the Company must request and attend a termination interview with the Personnel Officer.

Use of Time-clocks

33. All employees shall regularly register on time-clocks four times each day as follows: (1) morning in, (2) noon out, (3) noon in, (4) evening out. Employees working overtime shall ring in addition: (5) night in, (6) night out. At noon all employees shall register "Out" within fifteen minutes and "In" not earlier than thirty minutes after the regular stopping time.

34. Department Chiefs shall see that their employees are properly instructed in the use of the time-clocks.

35. An employee failing to register on the time-clock, when it is in service, shall forfeit pay for one-half hour's time for each failure to register.

36. When employees register on the time-clock after the regular time their time is figured from the next even quarter hour. Those registering before the regular time are credited with the time up to the last even quarter hour.

37. Ringing a time-clock for another employee is considered sufficient cause for the dismissal of the employees implicated.

38. All office employees shall ring out within fifteen minutes after their regular stopping time unless they actually remain for work.

Entrance Cards

39. Entrance cards are furnished employees. They show the numbers assigned on the time-clock cards and serve as passes during Regular Hours.

40. Loaning an entrance card or other pass or badge to another person for any purpose is forbidden.

41. If an employee loses his card, he may secure a new one by notifying the Personnel Officer. A deduction of \$.... will be made from wages due employee for replacing the lost card. Cards which become soiled from handling may be replaced without charge by returning them to the Personnel Officer.

Vacations

42.weeks' vacation is granted to employees who have been continuously with the Company one year immediately preceding (day of) (month).

43. For a shorter period of service one day is granted for each full month with the Company previous to (day) of (month).

44. Certain classes of employees are restricted to shorter vacations or no vacations. Employees are advised when accepting employment affected by this clause.

45. Vacation pay shall be given the first pay day after the vacation is ended. Pro rata vacation pay shall be given those leaving the Company's service.

46. All vacations which are allowed shall be taken between the first Monday in (month) and the last Saturday in (month) unless otherwise authorized in writing by the Personnel Officer.

47. Holidays occurring during the vacation period shall not be considered as regular vacation days.

48. Where an employee's pay has been changed from an hourly to a weekly or monthly rate, he may be allowed a vacation of one day for each full month of continuous service on the weekly or monthly rate previous to (day) of (month).

Time of Pay

49. Payment of salary or wages due is made Employees may obtain information in regard to the day of the week on which they are to be paid from the Pay Roll Department.

50. The first pay drawn by an employee covers the time from the day he begins work up to and including the first (day).

51. No payment of salary or wages earned is made in advance of the regular pay day except in extremely urgent cases.

52. Final pay may be drawn on the day an employee leaves the Company, provided notice of his intention to leave has been given his Department Chief at least ... days prior to day of leaving. Otherwise final pay may not be drawn until the next regular pay day, after which time the final pay will be forwarded by cheque if so requested to the address furnished with the request.

Discipline

53. On entering the factory buildings employees are expected to go directly to the department to which they have been assigned and to remain in that department until stopping time unless otherwise directed by the Department Chief.

54. While on the premises employees are not allowed to work on other than the Company's business. If written permission is first obtained from the Personnel Manager, the Personnel Manager may permit an employee or representative of a trade union or an employees' organization to confer with him during working hours

or to attend to the business of the organization or union during working hours without deduction of time so occupied in the computation of the time worked for the employer and without deduction of wages in respect thereof.

55. Persons occupying executive positions are forbidden to borrow money from their subordinates.

56. Except with the written consent of the employer, no trade union or employees' organization, and no person authorized by the union or employees' organization to act on its behalf, shall attempt, at the employee's place of employment during his working hours, to persuade an employee to join the trade union or employees' organization.

57. No trade union or employees' organization and no person acting on its behalf shall support, encourage, condone or engage in a "slowdown" or other activity designed to restrict or limit production; but this provision shall not be interpreted to limit a trade union's legal right to strike and a thing required by a provision in a collective agreement for the safety or health of the employees shall be deemed not to be a "slowdown" or designed to restrict or limit production.

58. Where a dispute has arisen by reason of a change in the existing terms of employment proposed by the employer, the employer shall not, without the consent of the employees affected, make such change effective until a period of two months has elapsed from the date when the employer notified the employees of such proposed change.

59. Nothing in these regulations shall be interpreted to prohibit the suspension or discontinuance of an industry or of the working of any persons therein for a cause not constituting a lockout or a strike.

60. Complaints or grievances shall be referred to the foreman in charge of the worker with the exception of complaints and grievances concerned with the misinterpretation or violation of a collective agreement which shall be handled according to the procedure set forth in the collective agreement.

61. The assignment of salary or wages to loan agents or others is prohibited.

62. Washing up or making other preparations to leave before stopping time is not permitted.

63. Lighted cigars, pipes or cigarettes shall not be carried into the buildings nor shall they be lighted before leaving the buildings.

64. Smoking during working hours on the Company's premises is forbidden except during rest periods in designated smoking areas.

65. Employees shall abstain from the use of spirituous liquors and profane and vulgar language while on the Company's premises.

66. On account of the women and minors employed by the Company, it is thought necessary to prohibit employees from patronizing places where liquor is illegally sold. Violations of this rule will be considered cause for dismissal.

67. Fighting on the premises of or near any of the entrances to the Company is not permitted.

68. All forms of gambling on the Company's premises are prohibited.

69. Printed or written matter of any kind shall not be hung on the walls or columns.

70. Employees maliciously defacing the Company's property are subject to dismissal.

71. Fresh air is necessary for good health and employees shall not interfere with the proper ventilation of the offices and workrooms.

Sanitary Conditions

72. Employees are forbidden to throw anything about the premises or out the windows of the Works. Receptacles for refuse are provided throughout the buildings and grounds.

73. Employees using desks, benches, machinery and tools shall keep them clean and orderly.

74. Material likely to clog waste pipes shall not be thrown in sinks, urinals or closets.

75. Spitting on the floors, stairways, walls and walks is prohibited.

Personal Property

76. Personal property shall not be removed from the Company's premises without a pass issued by a Department Chief after he has inspected the property.

77. Employees are cautioned against leaving money or valuables in lockers or in their clothing when not in use. The Company does not assume responsibility for any loss.

78. Where lockers are provided for employees they are equipped with locks, the keys to which are furnished the users. A charge of . . . cents is made for any key which is not returned when the employee leaves the Company. Lost keys are replaced for . . . cents each.

79. All 'found' articles shall be forwarded to the Police Department who shall have notices posted on Bulletin Boards throughout the Works advertising these articles. Articles shall be kept for three months and, if not called for within that time, shall be turned over to the finder.

80. All 'lost' articles should be reported to the Police Department, who shall have notices posted in the same manner as for 'found' articles.

Visitors

81. Employees are not permitted to bring visitors into the buildings or grounds.

Fire

82. In case of fire in any department the employees shall adhere to the instructions issued to them at the last fire drill.

Change of Address

83. The Personnel Officer must be advised of any change of address.

CASE HISTORIES

Quoted from "Factory Management and Maintenance", September, 1943.

"Our Jobs Together" is the title of the *Arlington Mills* booklet which tells employees, particularly new employees, what they may expect from the Company and what the Company, in turn, expects of them.

The booklet is so set up that each pair of facing pages discusses one subject. The left-hand page describes company policies; the right-hand page tells what is expected of employees.

In addition to making employees "feel at home", the booklet provides:

1. For management, a clear-cut statement of labour policy which will guide supervision in dealing fairly and consistently with all employees. Management's control is thus improved because there is less leeway for individual interpretation of unwritten rules.

2. For supervisors, a clear statement of company policy which they are responsible for carrying out at all times. It also indicates what sort of conduct they have a right to expect from employees. Thus, it guides them in dealing fairly with employees under normal circumstances.

3. For old employees, the realization that there are certain well-defined regulations which must be complied with for the benefit of all. Equally important, it provides a clear statement of the standards of treatment which employees have a right to expect from supervisors.

4. For new employees, a quick and effective introduction to the company, a clear statement of company labour policies, and a permanent guide to proper conduct on the job. It reduces unnecessary questions and prevents the misunderstandings which might lead to separations.

The entire booklet is designed to emphasize the "give and take" relationship of management and employee. The booklet begins with a friendly statement signed by the president, followed by a short "Story of the Arlington Mills" which awakens in the employee a sense of pride in being associated with a progressive wide-awake and capably managed organization.

Nine main subjects are then discussed on each of the following sets of facing pages. The left-hand page is headed—"This is the Arlington Mills Job", under which the employee is told of his rights and privileges and is given other information answering the questions most likely to arise in his mind. The right-hand page is headed "This is Your Job". This page contains a straightforward statement of the employee's obligations to the company.

The nine headings are: Employment; Wages and Job Performance; Working Conditions; Hours of Work; Regularity of Employment; Opportunity for Advancement; Safety and Health; Group Relations; Conduct.

Every effort has been made to arrange these subjects logically in the order of their relative importance so that the new employee will be gradually drawn to read through the book as each new question comes to his mind after he starts work. The question of conduct is significantly placed last so that the new employee will not immediately gain the impression that if he makes a mistake he will be subject to discharge. Most of the subjects covered under "Conduct" have been

taken up with less emphasis on the previous pages, however, so that there will be no occasion for the employee to state that he did not know the rules.

"Our Jobs Together" is the employee's individual property and is of such a size (4 x 7 inches) that he can keep it at home or in his locker or, if he wishes, carry it with him for reference.

Guidebooks for new employees have value only if they are read and used consistently. To keep up interest in the guidebook, the company plans a series of questionnaires in the monthly mill publication, "Arlington Mills News and Views", which will challenge employees to find the answers by referring to their individual copies of "Our Jobs Together".

Many high officials have emphasized that the interests of employers and employees are essentially the same. "Our Jobs Together" tries to show the employee not that his interests are absolutely the same as those of management but that both management and employees have their rights and privileges which they are mutually bound to respect at all times.

This "give and take" relationship, with respect for the other party and with fair treatment by both sides, should help to build the morale and co-operation that must exist for efficient manufacturing operations during this war emergency.

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BETTER PLANT HOUSEKEEPING

A Remedy for the Following Basic Causes

Foreman Mismanagement
Low Wages
High Proportion of Women Workers
Improper Ventilation and Temperature
Insufficient and Unsanitary Washrooms
Monotony and Boredom
Poor Plant Housekeeping
Poor Health

Broad Definition.—Plant housekeeping in the narrow sense refers to cleanliness and tidiness of workrooms, restrooms, and lunchroom accommodation. Closely associated with such an interpretation is lighting, heating and ventilation. The definition used here, however, is broader and includes orderliness of benches, routing of materials and temporary storage of sub-assemblies.

Poor Housekeeping a Direct Cause of Manpower Loss.—As a result of poor housekeeping workers become apathetic and often develop a definite dislike for their work, morale is lowered, absenteeism increases and production falls off. Good housekeeping is essentially a matter of supervision and discipline and is generally conceded by management to be a prerequisite of an efficient plant operation. The indirect benefits resulting from sanitary, spotless, orderly workrooms is usually far in excess of the advantages visualized before inaugurating such a policy.

First Check Layout and Material Flow.—Poor layout of assembly lines and routing of materials often lead to unnecessary piling-up of sub-assemblies which not only increases the possibility of accidents but also tends to encourage a general slovenliness of benches and the workrooms in general. Aside from the obvious production necessity for a smooth flow of materials and a good general layout, it is difficult to plan and enforce tidiness when goods and materials pile up along the production lines. Management may well analyse from this standpoint as a first step towards good housekeeping.

Essentially a Supervision Problem.—If an examination of the plant reveals that layout and material flow appear satisfactory, the next step should be an analysis of the following items.

Lighting.—Good illumination is not only important policy from the standpoint of visibility for work but also in maintaining a clean and tidy plant. The lighting equipment, if sufficient in output and location, will make it more difficult for the worker to leave untidy benches or permit the accumulation of rubbish in dark corners. It will also encourage cleanliness of walls, floors and equipment. Good plant illumination is dependent upon the proper maintenance of the lighting equipment, since lamps and reflectors become ineffective if a coating of dust or oil is permitted to accumulate and dirty walls and ceilings do not reflect or spread the light to the best advantage. Proper lighting of halls and stairways reduces the accident hazard.

Employees' restrooms, washrooms, lunchrooms and recreation rooms will be more likely to be well treated and kept if properly illuminated.

Colour.—The quantity of lighting is dependent not only on the nature and strength of its source but on the colour and texture of the reflecting surfaces in the workroom. The use of light colours will reduce the amount of artificial light needed and may also produce better general illumination. Shades of blue and green are restful to the eyes. Painting mechanical equipment and piping in bright colours improves the atmosphere of the workroom and by accentuating the outline of the machine tends to reduce accidents. Considerable practical information is available in this connection from the Association of Paint Manufacturers.

Heating and Ventilation.—Workers perform best in a relatively narrow range of temperature only a few degrees either side of 68-70°F. for light operations and at a slightly lower temperature for heavier work. In larger plants it has been found profitable to install controlling devices and recently to install air cooling equipment. While such an investment may not be possible for operators of smaller plants, it is recommended that examination be made of any excessively cold or hot spots in the plant which might be remedied by utilizing waste steam or an inexpensive exhaust fan.

Washrooms.—Health authorities recognize the necessity for adequate facilities and proper care of plant sanitation, and there are provincial and municipal regulations applying in most localities. If management complies with these regulations "in the spirit" there will be little danger of ill health resulting from infection of the worker through communicable diseases. However, there is a psychological reason why management should give careful consideration to sanitary facilities. Inadequate, dirty, improperly lighted or badly ventilated washrooms have a profound effect on the worker and, in particular, women workers. Under such conditions the worker will neglect physical calls with attending symptoms of chronic fatigue, headaches and generally lowered efficiency. Good lighting and light coloured paint in washrooms encourage tidiness. Toilets should be equipped with lacquered, U-shaped, open-front seats which cost little and are far more hygienic than the old-fashioned circular varnished type. Toilet paper, soap and paper towels, hot water and plugs for basins should be available and toilet bowls and urinals kept well flushed and clean. Normally, a foreman and an appointed woman monitor should be directly responsible for seeing that these rooms are kept spotlessly clean at all times. However, as an added check, management should make periodic inspections. Good drinking water should be provided throughout the plant.

Restrooms and Lockers.—Restrooms, particularly for women, should be provided and be separate from the washroom. Female employees may be encouraged to plan the decoration of these rooms as an incentive to a homey atmosphere. Both lighting and colour may be used with freedom to attain a change from workrooms. Separate lockers not only protect the personal

effects of the worker but permit a change of clothing before returning home and are welcomed by employees. Again cleanliness must be maintained and soiled clothing must be removed to avoid any unpleasant odours. It is advisable to make frequent inspections of all restrooms and lockers.

QUOTATIONS FROM THE ONTARIO FACTORY SHOP AND OFFICE BUILDING ACT

Lighting

Section 37—(1).—The employer in every factory, shop, bakeshop, restaurant or office building shall, during working hours, keep the factory, shop, bakeshop, restaurant or office building, including all passages and sanitary conveniences used in connection therewith and under his control properly lighted and heated so as not to be injurious to the health, safety and comfort of the employees, and the owner of every building used as a factory, shop, bakeshop, restaurant, or office building shall at all times keep the same or such parts thereof as are under his control or are used in common by the tenants or occupants of the building, properly lighted and heated so as not to be injurious to the health, safety or comfort of persons employed in the building or using or having access to the same.

Temperature and Ventilation

Section 41 (1).—The employer in every factory, shop or restaurant shall:

- (c) heat the premises throughout and regulate the temperature so as to be suitable for the work to be performed therein, and not to be injurious to the health or comfort of the employees; but in no case shall the temperature be less than sixty-eight degrees Fahrenheit unless otherwise authorized by the inspector in writing.
- (d) ventilate the factory, shop or restaurant in such a manner as to keep the air reasonably pure and so as to render harmless, as far as reasonably practicable, all gases, vapours, dust or other impurities generated in the course of any manufacturing process or handicraft carried on therein that may be injurious to health.

Section 41—(3).—In every factory or shop where any process is carried on by which dust is generated and is inhaled by the workers to an injurious extent, then, subject to the regulations, the inspector may, if such inhalation can by mechanical means be prevented or partially prevented, direct that such means shall be provided within a reasonable time by the employer who shall be bound so to provide them.

Section 41—(4).—Where grinding, polishing or buffing is carried on in any factory or shop, subsection (3) shall apply irrespective of the number of persons employed therein.

Sanitary Facilities

Section 39—(1).—The owner of every building used as a factory, shop, bakeshop, restaurant, or office building shall:

- (a) provide a sufficient number and description of privies, earth or water-closets and urinals for employees of such factory, shop, bakeshop, restaurant or office building, including separate sets for the use of male and female employees with separate approaches thereto, one closet and

one urinal for every twenty-five males and one closet for every fifteen females employed in the factory, shop, bakeshop, restaurant or office building and shall keep at the entrance to such closet a clearly painted sign indicating for which sex the closets are provided.

- (b) be responsible for the remedying of any effluvia arising from any drain or defective plumbing and for any repairs required to keep the building in a safe and habitable condition.
- (c) arrange for a supply of pure drinking water available for each occupier.

Section 41—(1).—The employer of every factory, shop or restaurant shall:

- (b) keep privies, earth or water-closets and urinals in good repair and in a sanitary condition, and keep closets separated for male and female employees and provide conveniences to the satisfaction of the inspector for the employees using them.
- (f) provide a washroom, clean towels, soap and a sufficient supply of wholesome drinking water and proper drinking cups for employees, and water taps which shall be at least eight feet distant from any water-closet or urinal, and also, in the case of a foundry, shower baths for the employees.

Women's Rooms

Section 38—(1).—Where not less than thirty-five females are employed in a factory or shop, the employer shall provide suitable dressing-rooms and eating rooms for the female employees and shall employ a suitable person as a matron or attendant to have charge of such dressing rooms and eating rooms.

REFERENCE

Quoted from "Canadian Business", October, 1942.

Within recent months absenteeism has become a serious problem in many industrial plants. More man-hours are lost, more production slowed up through preventable sickness than through accidents. Colds, flu and other germ-borne diseases are perhaps the top-ranking saboteurs in industry.

First step in protection of personnel is the provision of centralized cool drinking water; if necessary with portable water coolers and individual paper drinking cups.

Cleanliness is not only next to godliness,—it's the most efficient way of preventing infection. Over each basin or wash trough liquid soap dispensers or soap valves should be placed and filled with a suitable liquid soap, germicidal or otherwise. Washrooms should be equipped with individual paper towels in dispensing cabinets, and with self-closing waste receptacles for used paper towels and other rubbish.

Third step in this anti-sickness campaign is the proper cleaning of floors and washrooms. A powerful germicide should be used in scrubbing washrooms and in the floor washing-water, and a disinfectant should occasionally be sprayed throughout the premises or used in the ventilating systems. On shower bath floors a good germicide will help to eliminate athlete's foot.

Washable floors should be thoroughly scrubbed with a good liquid cleaning soap. For top efficiency and

a thorough polishing of wood or linoleum surfaces electric floor scrubbing and polishing machines are available. In these days of shortage of help they do the work thoroughly and with a minimum of labour.

CASE HISTORIES

Quoted from "Factory Management and Maintenance", December, 1943.

Porter-Cable Machine Co., Syracuse, N.Y. Good housekeeping isn't something that can be acquired and then be put away and forgotten. It requires a good deal of attention to many details and never-ending follow-up to make sure that everyone does his or her part. It is a mistake to assume that the task of keeping a plant clean and orderly can be turned over to the janitors and become their responsibility alone. Our experience has been that everyone from top executive down has a definite part to play in any well-organized housekeeping program, and must consistently do his bit if the program is to achieve enough success to make the effort really worth while.

Cleanliness and orderliness are conditions that we have long considered to be so essential that we are really willing to spend whatever money and effort are necessary to maintain them. They are certainly conducive to, if not essential for, good morale, high quality of workmanship, safety and the minimizing of fire hazards. We want all these advantages in as full measure as we can get them.

The relationship between safety, fire hazard and good plant housekeeping, for example, is quite obvious. Floors that are oily or littered with waste materials constitute a first-class slipping hazard. If tote boxes or piles of materials or parts are allowed to lie in or protrude into aisles the chances are that someone will trip over them and may sustain a serious injury.

Furthermore, accumulations of dust, dirt and waste materials are inevitably fire breeders.

The problem of maintaining good housekeeping practices has been attacked from different angles. For example, the management makes clear in one way or another that good housekeeping is a tradition in our plant that must be observed everywhere, all the time. Over the assembly benches, for example, are small signs reading: "A clean bench means that you are a good assembler".

Suitable receptacles for waste materials have been provided at all workplaces and operators are instructed and required to use them. The foremen of the different departments and their assistants are responsible for seeing that these instructions are obeyed. They are also required to see that aisles and passageways are kept clear. Nothing is allowed to lie on the floor or to protrude out into the passageways.

A force of five sweepers, four men and a woman, spend practically all their time brushing up and removing all wood shavings, metal chips and anything else that gets on the floor.

Beginning at three o'clock each afternoon all containers of waste, including metal chips, are emptied into larger receptacles in the plant yard. No waste product of any kind is allowed to remain in the plant buildings overnight. While awaiting disposal, oily chips

are stored in covered but well ventilated metal containers. Ventilation is necessary to dissipate any heat generated by slow oxidation of the oil which otherwise might lead to a temperature rise sufficient to set the mass on fire.

Once a month the spaces under benches and all other places where dirt or waste of any kind might be accumulated are carefully inspected and cleaned out.

These measures have been successful in maintaining a high standard of housekeeping. Recently we increased their effectiveness by fostering the competitive spirit among the shop departments. Every Monday morning the department that has been judged the cleanest and most orderly during the preceding week is presented with a large sign bearing testimony to that effect. Along with it goes a supply of favorite soft drinks and an award of war stamps. The sign is hung in a prominent place in the department and remains there for a week. The department that is runner-up is also privileged to display a similar sign granting second place honours. The judges are two men from the general manager's office who are in constant touch with all departments.

We know that this scheme is not new—in fact it is in use in many other plants—but it works well because it gives a tangible bit of recognition to the two departments that have tried conscientiously and have been most successful in keeping their workplaces in good order.

Incidentally, the presence of a large number of women workers has been of decided benefit to our housekeeping program. Like all other plants, we have lost a large number of men to the armed services. To a considerable extent these men have had to be replaced by women, who also are a large part of the many new workers made necessary by increased production. Women are housekeepers by instinct and we have found them to be enthusiastic supporters of our housekeeping practices.

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DAY NURSERIES

A Remedy for the Following Basic Causes

High Proportion of Women Workers
Unavailable Day Nurseries

The heavy demands for manpower for Canada's war effort caused acute labour shortage in many essential industries. To help meet requirements it was found expedient to enlist the services of women with dependent children. However, the worries of a working mother for her children are likely seriously to reduce her productivity and cause high absenteeism, lateness, and accidents. While many women have been able to make satisfactory private arrangements to care for their children while at work, this problem in other instances has been acute.

Governments Provide Assistance.—As a practical aid to such women workers and to attract others to industry, the Dominion Government has made arrangements with the provincial governments of Ontario and Quebec and will extend similar co-operation as provincial governments desire assistance. The Dominion Government offers to share the cost of operation of day nurseries under provincial and municipal direction, provided certain standards are maintained. The organization is under the National Director of Wartime Day Nurseries with the co-operation of Departments of Labour, National Selective Service, Welfare, Health, Education

and the Children's Aid Society. Thus, the child's health, feeding and training is put under the supervision of specially trained nursing directors.

The Cost to Mothers.—The cost to the mother for 10-12 hours care per child per day is 25 cents for one child plus 10 cents for each additional child. This includes midday and evening meals for children five years of age and under. After school supervision is provided for children up to fourteen years of age.

The Plan Needs Selling.—It has been found that once women start using the services of these day nurseries they are usually well satisfied with the care received by their children. However, the experience of those interested in the establishment of units indicates that, until mothers are familiar with the nursery program, they hesitate to leave their children in these nurseries and that it is necessary to "sell" the plan. The best method is by having an employed mother who finds the service satisfactory praise it to friends who would be willing to work if they could be sure that their children would be well cared for during working hours. Other methods of interesting mothers in the possibilities of industrial employment include conducted visits to nurseries for groups of unemployed women, and the showing of the National Film Board movie titled "Now We Are Under Six". For other references apply to the Department of Labour of the Dominion Government and Departments of Welfare, Labour, Health, and Education of the Governments of Ontario and Quebec.

EXPLANATION OF TAX LAWS]

A Remedy for the Following Basic Cause

Income Tax

The Problem.—Misunderstanding of the operation of income taxation is responsible for a widespread belief among workers that to earn more than a certain amount is useless as the greater part of earnings above this level are taxed away. Direct results of this belief include refusal to work overtime, soldiering on the job, absenteeism, taking part-time jobs with two employers, and high labour turnover. Hence, management, in its own interest, should endeavour to explain the operation of income taxation to its employees.

Methods of Attacking the Problem.—The following explanation of the incidence of income taxation on standard and overtime pay and of the operation of the "ranging" system of determining tax payable are offered as a guide to management when explaining income taxation to workers and in answering workers' questions. This information can be presented to employees through posters, pay envelope inserts, meetings with groups of employees and to the individual worker.

Incidence of Income Taxation on Standard and Overtime Pay.*—Workers frequently complain that overtime earnings are taxed much more heavily than

standard earnings and, therefore, believe that it is not worth while to work overtime. This complaint results from two misconceptions regarding the basis of income taxation. These misconceptions are: First; it is believed that every dollar of standard pay carries an equal part of the tax burden. Actually the first \$660 (if single, \$1,200 if married) earned per year is tax-free, and, therefore, the whole tax burden falls on earnings in excess of \$660 (or \$1,200) per year. If this fact is not understood, the arithmetically correct conclusion is that overtime earnings do carry an unfair tax burden relative to standard earnings. However, as shown above, the error lies not in the arithmetic used, but in the figure to which the arithmetic is applied. Second; since the tax burden per dollar of overtime earnings is slightly greater than the tax burden per dollar of standard earnings, it is believed that overtime earnings carry an unfair tax burden. Actually the reason is, of course, that overtime earnings increase gross earnings and, therefore, based on the principle of "ability to pay", the larger the income the greater the tax burden per dollar. Net earnings after taxation are, of course, greater when overtime is worked than when standard time is worked. Therefore, that overtime earnings do not bear an inequitable share of taxation can be demonstrated to workers by showing them how much of the tax burden is carried by their standard earnings and how much is carried by their overtime earnings.

* All data is in terms of 1943 income tax rates.

Hereunder follows a pictorial explanation of the incidence of income taxation on standard and overtime pay. The distribution of posters following this pattern should be helpful in dislodging the workers' misconceptions regarding income taxation.

SUPPOSE YOU EARN
THIS MUCH IN A
STANDARD WORKING
WEEK



SINCE YOU PAY NO
TAXES ON AT LEAST
THE FIRST \$12.69 YOU
EARN PER WEEK, YOUR
TAXES ARE NOT
DEDUCTED
LIKE THIS



YOU ARE
NOT TAXED
ON YOUR
ENTIRE
EARNINGS

BUT
LIKE
THIS

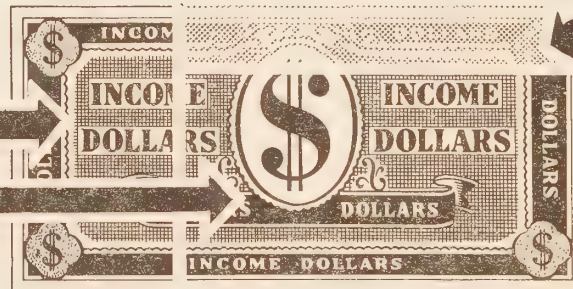


YOU PAY **NO** TAXES
ON AT LEAST THE
FIRST \$12.69 YOU
EARN PER WEEK



YOU
ARE TAXED
ON THIS
MUCH

EVERY WEEK YOU
TAKE **THIS MUCH**
HOME



YOUR TAX
DEDUCTION
IS
THIS MUCH

**BY WORKING OVERTIME
YOU EARN *THIS*
*MUCH EXTRA***



**YOUR TAXES ARE
DEDUCTED
*AS BEFORE***



**EVERY WEEK YOU TAKE
THIS MUCH HOME-
YOUR STANDARD
EARNINGS
YOUR OVERTIME
*EARNINGS***



On page 42 is a form which carries the above argument through in terms of the worker's hourly wage rate and his hours of work. In the left-hand column is an example which assumes that the worker is paid weekly, that he is single and has no dependents, that he works a standard working week of 44 hours at an hourly wage

rate of 80 cents, and that he is asked to work 4 hours per week overtime at time-and-a-half or \$1.20 per hour. The right-hand column is left blank and can be completed by any employee or for him by management in terms of his specific wage rate, hours of work, and marital and dependency status.

When Working Standard Hours	Example			Your Case		
	Single person with no dependents			Work it out in this column		
	\$ earned	at an hourly wage of	for hours of standard work	\$ earned	at an hourly wage of	for hours of standard work
1. Weekly earnings before income taxes are deducted are.....	35.20	0.80	44			
2. No income tax is deducted from at least the first \$12.69 you earn per week.....	12.69	0.80	16			
3. Taxes are deducted from the balance of weekly earnings (line 1 less line 2) or.....	22.51	0.80	28			
4. Total weekly income tax deduction is.....	6.85	0.80	8½			
5. So, the balance of the taxable portion of your earnings after income tax deductions are made is (line 3 less line 4).....	15.66	0.80	19½			
6. You take home at the end of a standard working week the portion of your earnings on which you are not taxed (line 2).....	12.69		16			
Plus the balance of the taxable portion of your earnings after income taxes are deducted (line 5)	15.66		19½			
or you take home at least (less non-tax deductions, if any).....	28.35		35½			
7. And your contribution to the war (paid in the form of taxes) is (line 4).....	6.85		8½			
8. Or, $\frac{(\text{line 7} \times 100)}{(\text{line 3})}$ equals approximately 30% of the taxable portion of your earnings.				Or, $\frac{(\quad \times 100)}{(\quad)}$ equals approximately % of the taxable portion of your earnings.		
When Working Overtime Hours	\$ earned	at hourly wage of	hours of overtime	\$ earned	at hourly wage of	hours of overtime
9. Weekly earnings before income taxes are deducted are.....	40.00					
10. Weekly earnings before income taxes are deducted during standard working week are....	35.20					
11. So, overtime earnings are (line 9 less line 10)....	4.80	1.20	4			
12. Your total income tax deduction is.....	8.60					
13. Your total income tax deduction during a standard working week is.....	6.85					
14. So, total income tax deduction from overtime pay earned is (line 12 less line 13).....	1.75	1.20	1½			
15. When you work overtime you take home (line 11 less line 14).....	3.05	1.20	2½			
16. Your contribution to the war (paid in the form of taxes) is (line 14).....	1.75	1.20	1½			
17. Or, $\frac{(\text{line 16} \times 100)}{(\text{line 11})}$ equals approximately 36 % of your overtime earnings				Or, $\frac{(\quad \times 100)}{(\quad)}$ equals approximately % of your overtime earnings.		
Therefore, of the taxable portion of standard earnings, your income tax deductions are (line 8) 30% and, of your overtime earnings, your income tax deductions are (line 17) 36%.				Therefore, of the taxable portion of standard earnings, your income tax deductions are (line 8) % and, of your overtime earnings, your income tax deductions are (line 17) %.		

Do you know that your weekly income tax deduction will **not** exceed 33% of the taxable portion of your earnings unless you earn more than \$55.00 per week?

A chart showing how much of personal income taxes is used to finance the war effort follows:



The "Ranging" System of Determining Tax Payable.—The income tax form T.1—Special (for those having an income of \$3,000 or under) is often attacked on the ground that putting the same tax burden on all annual incomes falling within ranges of \$10 is unfair, since it penalizes the person whose income falls just within the lower part of the \$10 range. The reason for taxing equally over a \$10 range in income is to facilitate computing the tax due and is, in fact, unfair to the person whose income just falls within the \$10 range and generous to the person whose income falls in the upper portion of the \$10 range, since the tax levied is approximately that

due by the person whose income falls in the middle of the range. However, it is within the power of a wage-earner whose earnings fall just within a \$10 range to overcome the unfairness and to take advantage of the generosity of this system of computing taxes by working whatever overtime hours are required to increase his earnings to just below the top of the \$10 range. In this respect he is better off than the salaried employee who is unable to vary his income at will. Actually the difference in tax rate per dollar is so slight on a yearly income increase of \$10 that the worker's objection can be shown to be too small to worry about.

IMPROVED FOREMANSHIP

A Remedy for the Following Basic Causes

- Foreman Mismanagement
- Incompatibility with Job or Fellow Workers
- Wasteful Effort
- Excessive Carelessness
- Apathy and Frustration
- High Proportion of Women Workers
- Monotony and Boredom
- Poor Plant Housekeeping
- Rules Violation

The Essentials of Good Foremanship.—The War has emphasized the importance of the foreman to the efficient operation of industry. The manufacture of new products, the use of new equipment, the utilization of "green" and inefficient labour and the changed status of labour have all served to clarify the qualities which a foreman must possess. These qualities will be of equal importance when the problems of reconversion are faced.

In general terms, a foreman must have:

- Technical competence;
- Skill in instructing;
- Skill in leading;
- Skill in planning;
- Knowledge and acceptance of responsibility;
- Knowledge of company policy and ability to interpret it to employees.

Why Foremanship Training is Necessary.—Experience has shown that many foremen, while technically competent, lack some of the above-mentioned qualities to a varying degree and thus are not fully efficient in their tasks. The changing status of labour has emphasized the importance of the foreman's "human qualities" relative to his technical qualifications and pointed out the need for careful selection, training and re-education of the supervisory staff. Various selection and training plans have been utilized by a wide section of industry

to great advantage both in upgrading workers to foremen and in re-educating foremen on staff. It has been found that the qualities of foremanship displayed by these men have exceeded that of the traditional foreman and have been responsible for marked increases in production, worker morale, co-operation and initiative and improved safety records.

What Management can do to Develop Good Foremanship.—Select foremen for their leadership and human qualities as well as for their technical abilities, and re-educate or shift foremen already on staff who do not meet these requirements. Management should take advantage of proven interview techniques and aptitude tests to determine the qualities of the applicant as well as of those on staff.

Encourage the foremen to use the facilities afforded by the Labour-Management Round Table. Many of the problems with which foremen are faced can be handled to the satisfaction of all concerned by the Round Table and in some cases the foreman can be absolved of responsibility for decisions which would prejudice his position with the workers. In any case, presentation assures that a problem will receive balanced impartial consideration and that the worker will not feel that he has been given an arbitrary one-sided decision.

Clearly define the foreman's authority and responsibilities. The foreman will then be able to resolve any complaints a worker under his supervision may have, or to refer the worker to the correct authority. In this manner the development of low morale and dissatisfaction among employees can be minimized.

Develop and consistently apply an equitable industrial relations policy and ensure that the foremen are fully acquainted with this policy. The foremen will then be able to interpret company policy to employees and make decisions which they know will be upheld by management.

Take advantage of the training programs offered by various private training agencies. These programs are designed to provide industry with workers trained to meet the requirements of the particular establishment. This facilitates the upgrading of experienced workers without causing a shortage of skilled, non-supervisory personnel. By making use of these programs, management can assure itself of an adequate staff of workers trained to its particular requirements and of supervisors selected from its own ranks. Experience has shown that upgrading workers creates loyalty to the company among all ranks of employees and that training under the company's sponsorship tends to tie workers to the establishment. Much of the material of general application may be found by consulting the Bibliography.

Take advantage of Canadian Vocational Training of the Department of Labour, Ottawa, or of the Provincial Governments. These courses are designed to develop:

- Skill in instructing;
- Skill in leading;
- Skill in planning.

Full details follow. For examples of the efficiency of these Courses see Case Histories, p. 49.

REFERENCES

Outline of the Foremanship Training Courses of Canadian Vocational Training, The Department of Labour, Ottawa.

How Courses Were Developed.—The courses were developed by the Training within Industry Branch, War Manpower Commission, Washington, D.C., in co-operation with thoroughly qualified representatives of industry. T.w.I. then made these courses available to the Canadian Vocational Training, Department of Labour, Ottawa.

The Courses Available.—There are five courses available:

- Job Instructor Training;
- Job Relations Training—Series I and II;
- Job Method Training;
- Job Safety Training.

Application should be made to Canadian Vocational Training, The Department of Labour, Ottawa, for full information.

JOB INSTRUCTOR TRAINING

Purpose.—The training of persons on the job is the responsibility, direct or indirect, of the foreman and supervisors in the plant. The Job Instructor Training Plan was specifically prepared to help foremen and sub-foremen, charge hands and lead hands, job setters, experienced operators and others who instruct workers. In the case of foremen and supervisors, the art of instruction is often an unfamiliar one. Mere possession of knowledge and skill does not imply the capacity to pass on that knowledge or that skill to others. The Job Instructor Training Plan, properly applied, supplies the answer to this problem.

Scope of Course.—The man's ability to instruct is increased by teaching him to adopt the procedure outlined below.

HOW TO GET READY TO INSTRUCT

Have a Time Table—

How much skill you expect him to have, by what date.

Break Down the Job—

List important steps, pick out the key points (Safety is always a key point).

Have Everything Ready—

The right equipment, materials, and supplies.

Have the Workplace Properly Arranged—

Just as the worker will be expected to keep it.

HOW TO INSTRUCT

Step 1—Prepare the Worker

Put him at ease.

State the job and find out what he already knows about it.

Get him interested in learning job.

Place in correct position.

Step 2—Present the Operation

Tell, show, and illustrate one IMPORTANT STEP at a time.

Stress each KEY POINT. Give reasons "WHY".

Instruct clearly, completely, and patiently.

Repeat Questions (WHY, WHAT, WHERE, WHEN, WHO, HOW). Check.

Make sure the learner really learns.

Step 3—Try Out Performance

- Have him do the job—correct errors.
- Have him explain each KEY POINT.
- Make sure he understands.
- Continue until YOU know HE knows.

Step 4—Follow Up

- Put him on his own.
- Designate to whom he goes for help.
- Check frequently. Encourage questions.
- Taper off extra coaching and close follow-up.

JOB RELATIONS TRAINING—Series I

Purpose.—The course is designed to teach the foreman how to start the new employee right, how to prevent accidents, correct workers, prevent grievances and handle grievances.

Scope of Course.—The course consists of five general discussions hinging around case histories supplied by the trainer. The discussions are directed by the trainer to bring out the points indicated under each heading below; and to teach how to handle such problems as constantly are faced by foremen in dealing with the "human element" angle of production.

HOW TO START THE NEW EMPLOYEE RIGHT

In acquainting the new employee with his job, the foreman must take **Five Steps**

Step I—Make Friendly First Impression on New Employee

1. Wear a smile.
2. Tell new man your name and get his.
3. Shake hands—if it comes natural.
4. Show interest in him by asking friendly questions.
5. Express sincere desire to help him make good.
6. Tell him you'll welcome questions.

Your impression on him is as important as his impression on you.

Step II—Explain Important Rules and Regulations

1. General safety rules.
2. Working hours.
3. Notification of absence.
4. Passes and badges.
5. Restricted areas.
6. Plant protective regulations.
7. Parking and traffic rules.

Step III—Tell Him about Employee Services and Opportunities

Sell the new employee on the future of his job by presenting briefly information regarding:

1. Vacation plan.
2. Sick leave privileges.
3. Medical and health services.
4. Recreational activities.
5. Educational opportunities.
6. Promotional opportunities.

Step IV—Explain Pay System

Be sure that new employee knows—

1. What his pay rate is.
2. How his pay is figured.
3. When he will be paid.
4. Overtime, holiday and night shift rates.
5. How he can improve his earnings.
6. That you will answer any pay questions that arise.

Step V—Acquaint New Employee With Places and Fellow-Workers

Show him such locations as—

1. First aid room.
2. Wash room.
3. Dressing room.
4. Stock room, stores and supply cribs.
5. Time-clock.
6. Cafeteria.

Give him personal introduction—

1. To employees with whom he will work.
2. To employees whom he will need to contact.

The first responsibility in the development of a satisfied and efficient worker is to make him feel at home when he starts his new job.

HOW TO PREVENT ACCIDENTS

You are responsible for preventing accidents on the work you supervise.

Follow these four basic steps.

Step I—Set a Good Safety Example.

1. Follow safety rules to the letter, yourself.
2. Demonstrate your sincere concern about safety by "practising what you preach."
3. Don't put safety in second place.
4. Permit no violation of safety regulations. Your men will take safety no more seriously than you do.

Step II—Instruct Each Worker Thoroughly in the Safety Precautions of his Job.

1. Make safety instructions a part of job instruction.
2. Make sure the worker clearly understands safety instructions.
3. Have him explain back to you each safety instruction.
4. Always give the reason why for each safety precaution.
5. Don't depend upon the employee learning safety from a rule book.
6. Test his knowledge of each rule in the book.

Step III—Keep All Safety Devices in Proper Use.

1. Sell the worker on the value of each safety device.
2. Be sure the safety device does not slow up or inconvenience the worker.
3. Do not permit operation without the device in proper place and use.
4. Laxness on your part in the use of safety devices will cause general safety indifference.

Step IV—Follow up Safety Instructions Constantly.

1. Keep workers safety-minded by periodic personal safety contacts.
2. Observe workers closely to detect any unsafe practices.
3. Reinstruct whenever necessary.
4. Keep safety posters, bulletins and instructions conspicuously posted and frequently changed.
5. Never ignore any violation of safety instructions.

A foreman's department will be as safe as he makes it.

HOW TO CORRECT WORKERS

Workers Need Correction

When they—

1. Waste material, time or supplies.
2. Do poor quality work.
3. Work slowly.
4. Disregard safety.
5. Abuse tools and equipment.
6. Disregard instructions.
7. Have disorderly work habits.
8. Do not co-operate.
9. Are careless.
10. Talk too much.
11. Are absent or tardy.
12. Are dishonest.
13. Are unreliable.
14. Shirk work.
15. Are intemperate.
16. Are quarrelsome.
17. Make mistakes.
18. Develop wrong attitudes and habits.

In correcting workers, follow these **Four Steps**:

Step I—Get All the Facts.

1. Check the facts before you act.
2. Your conclusion can be no sounder than the facts upon which it is based.
3. Be fair and without prejudice in weighing the facts.
4. Be sure your facts are **facts**.

Step II—Check the Worker's "Why".

1. Determine the reason for the worker's mistakes, wrong attitude, or wrong habits.
2. Discover the worker's motive.
3. Put yourself in his place.
4. Be sure that **you** are not to blame.

Step III—Choose the Right Correction.

1. Weigh the facts and the worker's reasons why.
2. Decide upon your course of action.
3. Be sure you are right.

Step IV—Correct Correctly.

1. Start the correcting process with the attitude that you sincerely want to be helpful.
2. Be tactful, calm and patient.
3. Control your temper.
4. Show confidence in the employee's ability to improve if properly corrected.
5. Do your correcting in private.

When Correction Does Not Correct

When fair, patient, sincere and repeated application of the four correction steps have failed, dismissal may be the last resort.

Remember, a poor foreman thinks quickly of discharge—a good foreman strives to correct.

HOW TO PREVENT GRIEVANCES

A grievance may be defined as "anything about a man's job which irritates him or tends to make his working conditions unsatisfactory."

Remove the Causes That Give Rise to Grievances by Taking These Four Steps:

Step I—List the Possible Causes of Grievances.

1. Discrimination.
2. Poor equipment.
3. Tiresome work.
4. Poor ventilation.
5. Partiality.
6. Pay system.
7. Grudge against another worker.
8. Pay shortage.
9. No cafeteria.
10. Working hours.
11. Parking facilities.
12. Transportation.
13. Too many bosses.
14. Crowded working place.
15. Efficiency ratings.
16. Promotion.
17. Hard-boiled guards.
18. Pressure for output.
19. Identification system.
20. Poor or confusing instructions.

Step II—Check Each Person and Each Job Against the List.

1. Consider one individual at a time.
2. Consider each possible grievance cause.
3. Ask yourself, "Does this cause apply to him?"
4. Consider one job at a time.
5. Check each possible grievance cause to see if it applies to the job in question.

Step III—Remove the Causes that Apply.

1. Don't wait for a complaint.
2. Move promptly to remove causes within your authority.
3. Bring causes beyond your control to the person with authority.
4. Tell worker affected what you are doing.

Step IV—Keep Personal Contact with Each Worker.

1. Know what's on each worker's mind.
2. Show interest in his working conditions.
3. Talk to him about his job.
4. Give him ample opportunity to confide in you.
5. Put yourself "in his shoes".

Remember if a worker **thinks** he has a grievance he may be just as discontented as though he actually has a just grievance.

HOW TO HANDLE GRIEVANCES

Neglected or poorly handled grievances cause dissatisfaction, reduce worker efficiency, increase accident hazards, and may result in the loss of a needed employee's services.

To Handle a Grievance Properly, Take the Following Four Steps:

Step I—Listen Open-Mindedly

1. Willingness to listen opens the aggrieved worker's mind.
2. Listen patiently.
3. Listen, no matter how trivial the grievance.
4. Encourage him to tell his story completely.
5. Show sincere interest in the worker's complaints.
6. Discuss, don't argue.
7. Even the small grievance is important to the man.

Step II—Get All the Facts Straight

1. Encourage the man to repeat his grievance.
2. Question him carefully.
3. Talk to others if necessary.
4. Consult records when necessary.
5. Take time to get all the facts straight.
6. Don't "jump to conclusions."
7. If need be, consult the man above you.

Step III—Act Promptly and Fairly

1. Don't delay action.
2. Don't "pass the buck."
3. If the answer must be "No" give all the reasons why.
4. Handle an imaginary grievance with all tact and fairness.
5. Try to save the man's face.
6. Be ready to give the man the benefit of the doubt.

7. Don't use your authority to force a decision.
8. Avoid snap judgment.
9. Never give a man "the run around."

Step IV—Report

1. Report all grievances to the man above.
2. Report grievances which you settle satisfactorily as well as grievances on which you must consult with higher authority.

"Most fires could have been put out with a teacup full of water if applied at the right time and place."

Take care of the little grievances and the big grievances may never develop.

Learn from every grievance how to make the jobs of all your men more satisfactory.

JOB RELATIONS TRAINING—Series II

Purpose.—The course is designed to assist the supervisor to establish and maintain good relations with the workers he supervises.

Scope of Course.—The instructees are invited to bring up for discussion their own job relations problems. The trainer leads men to a solution by guiding the discussion along the lines indicated below.

The basic difference between J.R.T. Series I and Series II is that the former is "preventive medicine" and the latter is "curative medicine".

A SUPERVISOR GETS RESULTS THROUGH PEOPLE

Foundations for Good Relations

Let each worker know how he is getting along

Figure out what you expect of him.

Point out ways to improve.

Give credit when due

Look for *extra* or *unusual* performance.

Tell him while "it's hot".

Tell people in advance about changes that will affect them

Tell them **WHY** if possible.

Get them to accept the change.

Make best use of each person's ability

Look for ability not now being used.

Never stand in a man's way.

People must be treated as individuals

HOW TO HANDLE A PROBLEM

1—Get the facts

Review the record.

Find out what rules and plant customs apply.

Talk with individuals concerned.

Get opinions and feelings.

Be sure you have the whole story

2—Weigh and decide

- Fit the facts together.
- Consider their bearing on each other.
- Check practices and policies.
- What possible actions are there?
- Consider effect on individual, group, and production.

Don't jump at conclusions

3—Take action

- Are you going to handle this yourself?
- Do you need help in handling?
- Should you refer this to your superior?
- Watch the timing of your action.

Don't pass the buck

4—Check results

- How soon will you follow up?
- How often will you need to check?
- Watch for changes in output, attitudes, and relationships.

Did your action help production?

JOB METHODS TRAINING

Purpose.—This program offers a practical plan to help produce a greater quantity of quality production in less time by making the best use of the manpower, machines and materials at hand. It teaches how to break down a job in order to improve efficiency. It teaches job simplification with the practical application of new methods. The *purpose*, then, is to make jobs easier and safer; it definitely is not designed to make people work harder or faster.

Scope of Course.—The course teaches *and tests*, by practical application, demonstrations and discussions by the group, the development of a plan designed to accomplish the above purposes.

HOW TO IMPROVE JOB METHODS

A practical plan to help you produce GREATER QUANTITIES of QUALITY PRODUCTS in LESS TIME, by making the **best use of the Manpower, Machines and Materials**, now available.

Step I—Break Down the Job

- List **all** details of the job **exactly as** done by the **Present Method**.
- Be sure details include all:
 - Material Handling.
 - Machine Work.
 - Hand Work.

Step II—Question Every Detail

- Use these types of questions:
 - WHY is it necessary?
 - WHAT is its purpose?
 - WHERE should it be done?
 - WHEN should it be done?
 - WHO is best qualified to do it?
 - HOW is the "best way" to do it?

2. Also question the:

Materials, Machines, Equipment, Tools,
Product Design, Layout, Work-place, Safety,
Housekeeping.

Step III—Develop the New Method

- ELIMINATE **unnecessary** details.
- COMBINE details when practical.
- REARRANGE for better sequence.
- SIMPLIFY all **necessary** details:
 - Make the work **easier** and **safer**.
 - Pre-position** materials, tools and equipment at the best places in the **proper work area**.
 - Use **gravity-feed** hoppers and **drop-delivery** chutes.
 - Let **both hands** do **useful** work.
 - Use **jigs** and **fixtures** instead of hands for holding work.
- Work out** your idea **with** others.
- Write up your proposed new method.

Step IV—Apply the New Method

- Sell** your proposal to the **boss**.
- Sell** the new method to the **operators**.
- Get final approval of all concerned on **Safety, Quality, Quantity, Cost**.
- Put the new method to work. Use it until a **better** way is developed.
- Give **credit** where credit is due.

JOB SAFETY TRAINING

Purpose.—The course is designed to teach foremen how to instruct workers to do their jobs safely and how to set up jobs so that no hazards are present.

Scope of Course.—The principles of the course are developed by applying them to a common shop job. The principles are outlined below.

CHECK EVERY STEP OF EVERY JOB AGAINST HAZARD SPOTS

1—Work Area

- Housekeeping—tripping, slipping.
- Storage—piling, floor loads.
- Cramped quarters, corners.
- Stairs, inclines, aisles.
- Blind exits.
- Holes, excavations.
- Ventilation, illumination.
- Exposed services—electrical, hot, sharp, etc.

2—Materials Handling

- Heavy.
- Rough, sharp, hot, slippery.
- Long.
- Poisonous; explosive.
- Fragile.
- Inflammable.
- Acid, alkali.

3—Machines

- (a) Point of operation—cutting, punching, forming, etc.
- (b) Power transmission—line shafts, other shafting, belts, gears.
- (c) Pinch points.
- (d) Projections.
- (e) Flying pieces.

4—Hand Tools

- (a) Proper tools for job.
- (b) Proper use of tools.
- (c) Proper place for tools.
- (d) Proper condition of tools.

5—Clothing

- (a) Improper clothing—loose, ragged, inflammable, neckties, jewellery, high heels, thin soles.
- (b) Protective clothing—head, feet, hands, body.

Three Rules

- (a) Remove hazard.
- (b) Use protective equipment.
- (c) Teach safe job methods.

Management's Part in the Courses.—These courses produce the best results if they have the active co-operation and support of management; in other words, management must lead. Where management may not be free to participate in the regular programs or where they may first prefer a practical demonstration, a two-hour appreciation session will be conducted by a Government Conference Leader.

There is no cost to management for these courses other than the time allowance to participants, although companies are required to provide a suitable conference room, equipped with blackboard, chalk, conference table and chairs.

Length of Courses.—Each course consists of five two-hour sessions preferably held on consecutive days.

Number of Participants and Trainers.—Best results are obtained with groups of from ten to twelve. Experience has shown that about 10 per cent of the personnel of any plant can be profitably trained and management should calculate the number of trainers needed on this basis.

Trainers or Conference Leaders.—Trainers are either provided by the Training Branch or, when practical, management can select suitable men to be sent to a central institute for a five or six day intensive course to be trained as Conference Leaders. These leaders return to their establishment and train the remainder of the personnel. To provide continued results, there must definitely be added a proper "follow-up" program.

Order of Taking Courses.—Experience indicates that the correct sequence is:

- Job Instruction Training;
- Job Relations Training—Series I and II;
- Job Methods Training;
- Job Safety Training.

How the Sessions Are Conducted.—The conferences are informal and consist mainly of group participation and controlled discussion. The advantages of the system are that each foreman in the group profits by the experience of others, and that his thinking is actively stimulated by general discussion. In addition, the foreman is given an opportunity to check the soundness of his own ideas on the subjects discussed and to compare his problems with the problems of others. His ability to think straight and to express his thoughts clearly is developed by his participation in the discussion. The foremen in the group come to understand each other better and the way is paved for closer co-operation between all foremen in the organization.

CASE HISTORIES

According to the Canadian Vocational Training, Department of Labour, Ottawa, 95 per cent of the persons trained in Job Methods have been able to develop and apply improvements on their own jobs. Production increases ascribed to Foremanship Training vary from 10 to 1,000 per cent with the output of machines increased from 15 to 500 per cent. Savings resulting from these improvements range from 1 to 50 per cent.

The following comments from manufacturers relative to the Foremanship Training Courses, as offered by Canadian Vocational Training, Department of Labour, are quoted in Bulletin No. 5.

A Radio Manufacturer.—"New method results in saving of material, better quality product, eliminates fatigue and causes healthier conditions. Total time of job cut from 43 minutes 2 seconds to 16 minutes 29 seconds. Use of oxygen and acetylene gases cut from 22 minutes 34 seconds to 7 minutes 44 seconds. Formerly required two men, one man now does complete job. Now in operation eliminating necessity of overtime. Operators delighted with improvement."

"Rejections reduced from 35 per cent to 5 per cent."

"Assembled with saving of 20 per cent in total time."

An Iron and Steel Company.—"Production has taken such a noticeable bounce that our vice-president noticed it from the production figures and made a special enquiry into the cause."

A Can Manufacturing Company.—"Press and liner operators have been trained in one month instead of two."

"A lineman on a can piling job in the shipping department has been trained in two weeks instead of five."

"A difficulty in one department resulting from overlapping of supervision was cleared up entirely as a direct result of the application of J. I. T. This situation has been a source of trouble over a period of ten years."

"We had several items which we have been manufacturing at a loss for some time, since our prices have not increased in any way comparable with the increases in labour and materials. These particular items were taken apart in some of the class sessions and the operations necessary to their manufacture were broken down into the proper steps. *The result is that our costs have*

been cut to the point where we are now able to manufacture them at the regular selling price."

"As a result of our experience with the training, we are not at all frightened by the prospect of having to man a large part of our precision machine shop with green men."

"You will be interested to know that by use of J. I. T. we have reduced the training time required on an exacting and delicate piecework job from 18 to 10 weeks."

"It has directly influenced faster production by making the foreman more conscious of his responsibilities."

"Our toughest job and one on which we have had the greatest turnover is our swing frame grinding. Our turnover in that department has been more than cut in half."

"Spoilage has decreased 75 per cent."

"The minor accidents have disappeared."

"Accidents are reduced."

"Everyone in the plant must be an instructor in his department before being promoted, the theory being that if a person knows his job well enough to teach it to someone else, he knows his job."

An Aircraft Manufacturer.—"The results produced in this plant alone from such classes have increased the efficiency one hundred per cent."

A Tin Can Manufacturer.—"Slitter and body-maker operators have been taught in one month where three were formerly required."

A Large Steel Company.—"Considerable trouble was experienced in training girls to operate overhead cranes and the period of training took from two to three weeks, after which, in some cases, the girls still did not use levers with both hands. By the use of J. I. T. procedures the training period has been reduced to an average of three days, better operators are secured and better care is taken of the cranes."

A Large Aircraft Concern.—"The able presentation of the advantages and worth of this training was appreciated by the management to the extent that arrangements are now being made to have this course given to all our supervisors."

An Aircraft Company.—"Up to the end of November we had put through this program 478 of our supervisory staff. At the end of September we had certificated 356 people and our Time Study Department then

made an estimate of the approximate savings in one year's operation of these 356 improvements. Their estimate was \$285,000 savings per year. These figures, however, did not include one new method on which the savings effected were estimated at \$183,000 per year."

"This morning the Supervisor of our Job Methods Department brought me in six evaluations of new improvements his Department had just made. The estimated savings per year for each improvement were over \$2,000. These were not special cases but those evaluated according to the regular routine of taking the improvements in order of their date of going into operation."

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IMPROVED LIGHTING

A Remedy for the Following Basic Causes

Inadequate Lighting

Night Shifts

Poor Health

The value of adequate lighting has been generally recognized by industry and widespread improvements have been made. However, many industrialists have

failed to grasp the fact that what is adequate illumination from the point of view of "seeing" is not necessarily the optimum from the point of view of the worker's productivity. Investigation has shown that many establishments which were apparently well illuminated were in fact below the optimum. Adjustments in equipment to bring these establishments to the optimum

level were greatly in management's interest since they reduced manpower loss with very little expenditure on installation and maintenance.

Quantity of Light.—Optimum levels of illumination for specific jobs have been determined and are presented below. By the use of a light meter the level of lighting on any specific job can be determined and the necessary adjustments in equipment made to bring it to the optimum. Light meters are inexpensive and readily obtained from photographic stores. If a combination of natural and artificial illumination is used, the part due to natural light should be measured separately from that due to artificial and, since natural light varies throughout the day, deducted when determining the equipment required. In choosing equipment, it should be remembered that one large incandescent lamp will give more light at a given distance below it than a cluster of several small ones that add up to the same wattage.

Recommended Minimum Standards of Illumination.—The majority of the recommended values of illumination in the following table refer to the general level of lighting in the working area as measured on a horizontal plane 30 inches above the floor. Where an illumination of more than 50 footcandles is necessary, it may be obtained by a combination of general and supplementary lighting at the point of work. Attention is called to the fact that the values given are minimum operating values for new lamps and clean bowls and reflectors. Values should never be allowed to drop below two-thirds of the footcandles indicated. When safety goggles are worn the light reaching the eye is likely to be materially reduced and the general level of lighting should, therefore, be increased at least ten per cent in such locations.

RECOMMENDED MINIMUM STANDARDS OF ILLUMINATION FOR INDUSTRIAL INTERIORS

These footcandle values represent order of magnitude rather than exact levels of illumination. See note at end of table for explanation of A, B, C.

	Minimum Footcandles in Service Measured 30 inches above the floor.
Assembly—	
Rough	15
Medium	30
Fine	B
Extra Fine	A
Bakeries	30
Book Binding—	
Folding, Assembling, Pastings, etc.	15
Cutting, Punching and Stitching	30
Embossing	30
Candy Making—	
Box Department	30
Chocolate Department—	
Husking, Winnowing, Fat Extraction, Crushing, Refining, Feeding	15
Bean Cleaning and Sorting, Dipping, Packing, Wrapping	30
Milling	45
Cream Making—	
Mixing, Cooking and Moulding	30
Gum Drops and Jellied Forms	30
Hand Decorating	75
Hard Candy—	
Mixing, Cooking and Moulding	30
Die Cutting and Sorting	45
Kiss Making and Wrapping	45

Minimum Footcandles
in Service
Measured 30 inches
above the floor.

Canning and Preserving	30
Chemical Works—	
Hand Furnaces, Boiling Tanks, Stationary Driers, Stationary and Gravity Crystallizers	8
Mechanical Furnaces, Generators and Stills, Mechanical Driers, Evaporators, Filtration, Mechanical Crystallizers, Bleaching	15
Tanks for Cooking, Extractors, Percolators, Nitrators, Electrolytic Cells	23
Clay Products and Cements—	
Grinding, Filter Presses, Kiln Rooms	8
Moulding, Pressing, Cleaning and Trimming ..	15
Enamelling	23
Colour and Glazing	30
Cleaning and Pressing Industry—	
Checking and Sorting	30
Dry and Wet Cleaning and Steaming	15
Inspection and Spotting	A
Pressing—	
Machine	30
Hand	75
Receiving and Shipping	15
Repair and Alteration	75
Cloth Products—	
Cutting, Inspecting, Sewing	
Light Goods	30
Dark Goods	A
Pressing, Cloth Treating (Oil Cloth, etc.)	
Light Goods	15
Dark Goods	30
Coal Tipples and Cleaning Plants—	
Breaking, Screening and Cleaning	15
Picking	A
Elevators—Freight and Passenger	15
Engraving	A
Forge Shops and Welding	15
Garages—Automobile—	
Storage—Live	15
Storage—Dead	3
Repair Department and Washing	45
Glass Works—	
Mix and Furnace Rooms, Pressing and Lehr, Glass Blowing Machines	15
Grinding, Cutting Glass to Size, Silvering	30
Fine Grinding, Polishing, Beveling, Etching and Decorating	75
Inspection	C
Glove Manufacturing—	
Pressing, Knitting, Sorting	
Light Goods	15
Dark Goods	30
Cutting, Stitching, Trimming, Inspection:	
Light Goods	30
Dark Goods	A
Hat Manufacturing—	
Dyeing, Stiffening, Braiding, Cleaning & Refining—	
Light	30
Dark	45
Forming, Sizing, Pouncing, Flanging, Finishing and Ironing—	
Light	30
Dark	45
Sewing—	
Light	30
Dark	A
Ice Making—Engine and Compressor Room ...	15
Inspection—	
Rough	30
Medium	45
Fine	B
Extra Fine	A

	Minimum Footcandles in Service Measured 30 inches above the floor.		Minimum Footcandles in Service Measured 30 inches above the floor.
Jewelry and Watch Manufacturing	A	Polishing and Burnishing	30
Laundries	30	Power Plants, Engine Room, Boilers—	
Leather Manufacturing—		Boilers, Coal and Ash Handling, Storage	
Vats	8	Battery Rooms	8
Cleaning, Tanning and Stretching	15	Auxiliary Equipment, Oil Switches and Trans-	
Cutting, Fleshing and Stuffing.....	30	formers	15
Finishing and Scarfing.....	45	Engines, Generators, Blowers, Compressors....	30
Leather Working—		Switchboards	45
Pressing, Winding and Glazing—		Printing Industries—	
Light	15	Type Foundries—	
Dark	30	Matrix Making, Dressing Type.....	A
Grading, Matching, Cutting, Scarfing, Sewing—		Font Assembly—Sorting	B
Light	30	Hand Casting	45
Dark	A	Machine Casting	30
Locker Rooms	15	Printing Plants—	
Machine Shops—		Presses	45
Rough Bench and Machine Work.....	30	Imposing Stones	A C
Medium Bench and Machine Work, Ordinary		Proof Reading	A
Automatic Machines, Rough Grinding,		Electrotyping—	
Medium Buffing and Polishing.....	45	Moulding, Finishing, Levelling Moulds, Rout-	
Fine Bench and Machine Work, Fine Auto-		ing, Trimming	B
matic Machines, Medium Grinding, Fine		Blocking, Tinning	45
Buffing and Polishing	B	Electroplating, Washing, Backing	30
Extra Fine Bench and Machine Work, Grind-		Photo Engraving—	
ing.—Fine Work	A	Etching, Staging	30
Meat Packing—		Blocking	45
Slaughtering	15	Routing, Finishing, Proofing.....	B
Cleaning, Cutting, Cooking, Grinding, Canning,		Tint Laying	A
Packing	30	Receiving and Shipping	15
Milling—Grain Foods—		Sheet Metal Works—	
Cleaning, Grinding and Rolling.....	15	Miscellaneous Machines, Ordinary Bench Work	30
Baking or Roasting	30	Punches, Presses, Shears, Stamps, Spinning,	
Flour Grading	45	Medium Bench Work	30 C
Offices—		Tin Plate Inspection.....	B C
Bookkeeping, Typing and Accounting.....	75	Shoe Manufacturing (Leather)—	
Business Machines—Power Driven (Transcrib-		Cutting and Stitching—	
ing and Tabulating)—		Cutting Tables.....	30
Calculators, Key Punch, Bookkeeping....	B	Marking, Buttonholing, Skiving, Sorting,	
Conference Room—		Vamping and Counting—	
General Meetings.....	38	Light Materials	30
Office Activities—See Desk Work		Dark Materials.....	75
Corridors and Stairways	8	Stitching—	
Desk Work—		Light Materials	75
Intermittent Reading and Writing.....	38	Dark Materials.....	B
Prolonged Close Work, Computing, Study-		Making and Finishing—	
ing, Designing, etc.....	75	Stitchers, Nailers, Sole Layers, Welt	
Reading Blueprints and Plans.....	45	Beaters and Scarfers, Trimmers, Welt-	
Drafting—		ers, Lasters, Edge Setters, Sluggers,	
Prolonged Close Work—Art Drafting and		Randers, Wheelers, Treers, Cleaning,	
Designing in Detail	75	Spraying, Buffing, Polishing, Embossing—	
Rough Drawing and Sketching.....	45	Light Materials.....	45
Filing and Index References.....	38	Dark Materials.....	75
Lobby	15	Storage, Packing and Shipping.....	15
Mail Sorting	38	Shoe Manufacturing (Rubber)—	
Reception Rooms	15	Washing, Coating, Mill Run Compounding....	15
Stenographic Work	75	Varnishing, Vulcanizing, Calendering, Upper	
Vault	15	and Sole Cutting.....	45
Packing and Boxing	15	Sole Rolling, Lining, Making and Finishing	
Paint Mixing	15	Processes	75
Paint Shops—		Stairways, Passageways	8
Dipping, Simple Spraying, Firing.....	15	Stone Crushing and Screening—	
Rubbing, Ordinary Hand Painting & Finishing		Belt Conveyor Tubes, Main Line Shafting	
Art, Stencil and Special Spraying.....	30	Spaces, Chute Rooms, Inside of Bins.....	8
Fine Hand Painting and Finishing.....	B	Primary Breaker Room, Auxiliary Breakers	
Extra Fine Hand Painting and Finishing		under Bins	8
(Automobile Bodies, Piano Cases, etc.)....	A	Screens	15
Paper Box Manufacturing—		Store and Stock Rooms—	
Light	15	Rough Bulky Material	8
Dark	30	Medium or Fine Material Requiring Care....	15
Storage	6	Structural Steel Fabrication	15
Paper Manufacturing—		Sugar Grading	45
Beaters, Grinding, Calendering, Finishing, Cut-		Testing—	
ting, Trimming, Paper Making Machines..	30	Rough	30
Plating	15	Fine	45
		Extra Fine Instruments, Scales, etc.....	A

Minimum Footcandles
in Service
Measured 30 inches
above the floor.

Textile Mills (Cotton)—

Opening, Mixing, Picking, Carding & Drawing	15
Slubbing, Roving, Spinning	30
Spooling, Warping on Comb	30
Beaming and Slashing on Comb—	
Grey Goods	30
Denims	B
Inspection—	
Grey Goods (Hand Turning)	75
Denims (Rapidly Moving)	A
Automatic Tying-In, Weaving	B
Drawing-In by Hand	A
Weaving	38

Silk and Rayon Manufacturing—

Soaking, Fugitive Tinting, and Conditioning or Setting of Twist	15
Winding, Twisting, Rewinding, and Coning, Quilling, Slashing	45
Warping (Silk or Cotton System) on Creel, on Running Ends, on Reel, on Beam, on Warp at Beaming	75
Drawing-In—	
On Heddles	A
On Reed	A
Weaving—	
On Heddles and Reeds	15
On Warp Back of Harness	30
On Woven Cloth	45

Woolen—

Carding, Picking, Washing, Combing	23
Twisting, Dyeing	23
Drawing-In, Warping	A
Weaving—	
Light Goods	38
Dark Goods	75
Knitting Machines	30

Tobacco Products—

Drying, Stripping, General	15
Grading and Sorting	A

Toilets and Washrooms

15

Upholstering—Automobile, Coach Furniture

30

Warehouse	8
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Welding	45
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Woodworking—

Rough Sawing and Bench Work	23
Sizing, Planing, Rough Sanding, Medium Machine and Bench Work, Glueing, Veneering, Cooperage	30
Fine Bench and Machine Work, Fine Sanding and Finishing	75

Items Marked "A".—These seeing tasks involve (a) the discrimination of extremely fine detail under conditions of (b) extremely poor contrast, (c) for long periods of time. To meet these requirements, illumination levels above 100 footcandles are recommended.

To provide illumination of this order, a combination of at least 30 footcandles of general lighting plus specialized supplementary lighting is necessary. The design and installation of the combination systems must not only provide a sufficient amount of light but also must provide the proper direction of light, diffusion, eye protection, and in so far as possible must eliminate direct and reflected glare as well as objectionable shadows.

Items Marked "B".—This group of visual tasks involves (a) the discrimination of fine detail under conditions of (b) a fair degree of contrast (c) for long periods of time. Illumination levels from 75 to 150 footcandles are required.

To provide illumination of this order a combination of at least 30 footcandles of general lighting plus

specialized supplementary lighting is necessary. The design and installation of the combination systems must not only provide a sufficient amount of light but also must provide the proper direction of light diffusion, eye protection, and in so far as possible must eliminate direct and reflected glare as well as objectionable shadows.

Items Marked "C".—The seeing tasks of this group require the discrimination of fine detail by utilizing (a) the reflected image of a luminous area or (b) the transmitted light from a luminous area.

The essential requirements are (1) that the luminous area shall be large enough to cover the surface which is being inspected and (2) that the brightness be within the limits necessary to obtain comfortable contrast conditions. This involves the use of sources of large area and relatively low brightness in which the source brightness is the principal factor rather than the footcandles produced at a given point.

Quality Factor in Light.—Having determined the quantity of light required for a specific task, other factors of good illumination must be considered. These factors may be summed up under the heading "Quality" and include glare, diffusion and distribution, colour of light and colour of surroundings. The correct assessment of "quality" factors may require the services of an illuminating engineer.

Glare.—Glare is objectionable because: when continued it tends to injure the eyes and disturb the nervous system; it causes discomfort and fatigue; and it interferes with clear vision and increases the risk of accidents. From both a humanitarian and a business viewpoint, the owner or operator of a factory should be interested in avoiding glare whether caused by daylight or by artificial light.

There are two common forms of glare, "direct" and "reflected". Direct glare is caused by excessive brightness or brightness-contrast within the visual field; that is, unshielded lamps or high-brightness surfaces of fixtures.

To reduce direct glare from artificial lighting, direct general-lighting "luminaires" should be mounted at a height sufficient to keep them well above the normal line of vision. They should be properly designed to limit both the brightness and the quantity of light emitted in directions directly below the horizontal since such light is well within the normal field of view and interferes with vision.

High brightness-contrasts should be avoided. For example, an unshielded lamp viewed against the low brightness of a dark ceiling may be very glaring; similarly, a bright window seen against darker surrounding walls.

Supplementary lighting sources should be carefully designed so that the light is confined to the immediate working area. Failure to observe this precaution may cause extreme annoyance not only to the workman using the source but to others in the vicinity. Care should also be exercised to prevent excessive brightness-contrasts between the work and the surroundings.

Reflected glare, as its name implies, is caused by high brightnesses, images or brightness-contrasts reflected from ceilings, walls, desk tops or other surfaces within the visual field, such as materials and machines. These brightnesses are accentuated when the surfaces are glossy in character, such as highly-polished machine

parts, smooth-finished surfaces, varnished table tops or other highly reflective surfaces. Reflected glare is frequently more annoying than direct glare because it is so close to the line of vision that the eye cannot avoid it. The effect of reflected glare for a given image brightness is reduced with higher levels of general illumination due to the reduction in contrast.

Diffusion and Distribution of Light.—Some directional and shadow effects are desirable in general illumination for accentuating the depth and form of solid objects, but harsh shadows should be avoided. Shadows are softer and less pronounced when diffusing units and units having a wide distribution of light are used, since then the object is illuminated from many sources. Alternate light and dark areas in strong contrast are undesirable because the eye has difficulty in adjusting itself for the two illuminations and seeing becomes tiring. For this reason, purely local lighting restricted to a small work area is unsatisfactory unless there is sufficient general illumination in the room.

Clearly defined shadows, without excessive contrast, are a distinct aid to sight in certain types of operations such as engraving on polished surfaces, scribed layout work, and textile inspection. When such shadow effect is indicated, it is best obtained by supplementary directional light combined with diffused illumination of ample intensity.

Colour Quality of Light.—It appears that, with equal footcandles of illumination, variations in colour quality of light have little or no effect upon clearness and quickness of seeing. However, in certain industries, colour discrimination is highly important, and light sources which provide lighting that will enable the matching to be carried on most accurately should be used. This is a matter in which an illuminating engineer should be consulted.

Colour of Surroundings.—Light coloured surfaces serve several purposes in the factory. They are of particular value in providing a high utilization of light because they reflect more light toward the working areas. Also, bright window areas and artificial light sources are less uncomfortable to the eye when viewed against light backgrounds.

Many progressive concerns are painting all their machinery with light tinted durable paints. This provides an increased amount of light which is reflected to the otherwise shadowed sections of the machine. Some manufacturers paint stationary and moving parts of machines different colours to prevent accidents by thus aiding perception.

Sources of Artificial Lighting Are of Two Types.

—*General Lighting.*—Modern industrial lighting practice requires the establishment of a base or minimum quantity of light throughout the room, termed general lighting. This may vary, depending upon the purpose for which the space is to be used. If the visual tasks are particularly severe, much higher illumination over restricted areas can be added upon this base. This additional light, known as supplementary lighting, is usually provided by luminaires placed relatively close to the areas being illuminated. The general lighting system, in contrast, usually consists of luminaires placed ten feet or more above the floor. The purpose of the general lighting

system where there is also supplementary lighting is to keep the brightness contrast between the well-lighted immediate work area and the surroundings within a range which is comfortable to the eyes, to provide sufficient light for safety and protection, and to illuminate ordinary seeing tasks.

The general lighting or the base quantity of light should be quite uniform, so that light will be available when needed at any point in the room. This is particularly desirable for interiors where the machine layout may be changed. If the general lighting has been designed for uniform illuminations, machines may be moved without necessitating an expensive change in the overhead lighting system.

Supplementary Lighting.—Supplementary lighting is necessary where the seeing task requires more light than is provided by the general illumination or where directional light is indicated.

Supplementary lighting should be specifically designed for the particular visual task. A number of specially-designed luminaires are available which supplement the general lighting over a limited area. In this way, the light is confined to the immediate work area and does not become a source of glare to any one in the room. Where a diffusing source of low brightness is needed, a large-area, low-brightness unit can be placed directly over the work zone.

It is often preferable for concentrating supplementary lighting units to be mounted at some distance from the point of work. Thus they cannot easily get out of adjustment and are not in the way of the workmen. This also eliminates the heat problem when filament lamps are used. Where a certain degree of adjustment is desirable, units can be mounted on flexible arms for manipulation by the workman to obtain the maximum advantage.

Supplementary lighting, however, should be specifically designed for the particular visual task. High illumination is usually provided with supplementary lighting and care should be taken that the contrast between the bright work and darker surroundings is not too great. In some cases the reverse must be guarded against—that is, having high brightnesses elsewhere in the field of vision. Though no two sets of conditions are exactly alike, in general the brightness ratio from maximum to minimum should not exceed 10 to 1; a ratio of 5 to 1 is preferable. While the measurement of footcandles is not an accurate determination of brightness, it suffices in most cases for this matter of satisfactory contrast. Hence, the common statement that with supplementary lighting the ratio of maximum to minimum footcandles should not exceed 10 to 1.

Maintenance of Illumination.—The proper and adequate maintenance of equipment is essential for both natural and artificial lighting. Systems which are adequate when first installed will soon deteriorate unless properly maintained. A regular, definite system of maintenance should be established so as to insure that skylights, side windows, lamps and accessories are at all times kept clean, in proper adjustment and in good repair. The recommended method of establishing a suitable maintenance schedule for the cleaning of lighting equipment is to check the illumination periodically with a light meter. When the illumination has

decreased to seventy-five per cent of its initial value, the lighting equipment should be washed with a detergent (without free alkali) and warm water. Frequently a group-replacement plan of relamping can be established to coincide with the cleaning period with a resultant saving in maintenance costs.

Means should be provided for easy access to all lighting units. Walls and ceilings should be repainted, preferably in light tones, at regular intervals. With indirect lighting systems it is essential that the ceiling be kept clean since the illumination comes from the ceiling. It should be remembered that the illumination requirements given in the tables apply to the lighting equipment under average operating conditions, not simply when new and clean as first installed.

The Value of Correct Illumination.—The value of correct illumination is apparent if one considers the generally accepted statement that eighty per cent of all mental impressions are received through the eyes. In addition, it takes time to see. Experience has shown that the beneficial effects of correct illumination include:

More Accurate Workmanship.—With correct illumination the possibility of making errors is decreased. In addition, sub-standard work is detected before final inspection, thus saving useless processing costs.

Increased Productivity.—Since it takes time for the eye to see, a correctly designed increase in illumination increases the amount of time used productively and decreases the time required to see the task.

Better Utilization of Floor Space.—By avoiding the necessity for locating machinery with respect to existing lighting facilities rather than placing machinery with respect to the productive process, floor space may be utilized to the greatest extent.

Greater Cleanliness.—Correct illumination makes it possible to detect unsanitary conditions and allows rapid and thorough supervision of the plant housekeeper's duties.

Compensating Defective Eyesight.—As the age of the worker increases his seeing ability decreases. However, an increase in illumination will compensate for loss of seeing ability. Thus the productivity of older, experienced employees is increased as well as that of younger employees whose vision is defective.

Reducing Fatigue.—Since eyestrain is a direct cause of fatigue, correct illumination reduces fatigue from this source to a minimum.

Improved Morale.—Correct lighting is essential in creating pleasant, cheerful surroundings conducive to good worker morale. Correct lighting also reduces petty annoyances by facilitating the finding and placing of tools and other tasks subsidiary to the main job.

Greater Safety.—Since approximately eighty per cent of mental impressions are received through the eyes and since it takes time to see, engineering for safe plant operation must include provision for adequate seeing in addition to mechanical safeguards. Thus, especially with rapidly-moving material, the worker will be able not only to detect any approaching mechanical failure but will have time to react and to avoid an accident.

The majority of the above is based on the Dominion Department of Labour's booklet "*Recommended Practice of Industrial Lighting*".

CASE HISTORIES

Quoted from "Recommended Practice of Industrial Lighting", Department of Labour, Canada.

Single rows of white 48-inch fluorescent lamps in troughs recessed in acoustic ceiling gave an initial illumination of 60 footcandles in a weave room. Ceiling height 9 feet. Distance between rows, 5 feet 4 inches. Room area approximately 11,000 square feet.

Well distributed lighting in machine shop permits maximum utilization of floor area, 750-watt filament lamps alternating with H-1 mercury lamps in prismatic reflectors. Mounting height 22 feet, spacing 14 feet 4 inches by 13 feet 8 inches. Illumination 45 footcandles.

Accidents do not have much chance to occur in a well-lighted shop. Well diffused uniform illumination floods every part of the room, rendering possible accident causes highly visible. Mercury and incandescent lamp units spaced on 16½ foot centres, mounting height 40 feet produce an average illumination of 26 footcandles. A cheerful effect is produced by white walls and ceiling.

Fifty-four inch R.F. fluorescent lamps in industrial reflectors provide 25 footcandles in a shop for heavy machine work. Mounting height 11 feet 6 inches, spacing 10 by 10 feet.

Pineapple canning. Fluorescent lamps in industrial reflectors arranged in rows 10 feet apart over trimming tables and 20 feet apart over packing tables provide 35 footcandles on trimming tables and 20 footcandles on the packing tables.

Precision tool room. Industrial luminaires installed in continuous rows spaced 10 feet apart. Two 48-inch fluorescent lamps per luminaire. Mounting height 10 feet. Illumination 40 footcandles.

A modern industrial area, 168 feet by 780 feet, artificial lighting, continuous rows of industrial fluorescent reflectors (two 48-inch fluorescent lamps per reflector) spaced 10 feet apart, mounting height approximately 12 feet. Illumination in service 50 footcandles.

Lighting specially arranged for silk mill looms, in effect supplementary lighting. Concentrating industrial units mounted three feet above the work. One 24-inch fluorescent lamp per unit. Illumination on the work 48 footcandles.

General lighting: continuous rows of industrial reflectors. Each reflector has two 48-inch fluorescent lamps. Spacing between rows 10 feet 8 inches, mounting height 10 feet 6 inches. General illumination 40 footcandles. Supplementary lighting one 36-inch fluorescent unit per operator. Illumination on the work 250 footcandles.

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IMPROVED NUTRITION

A Remedy for the Following Basic Causes

Improper Nutrition

Night Shifts

Poor Health

Malnutrition is a more important cause of lowered worker productivity than is commonly appreciated. It is more often the result of improper selection of foods than of eating an inadequate quantity.

Its Effect.—Malnutrition usually results in a run-down condition evidenced by abnormal fatigue, eye-strain, tooth decay, colds, headaches, susceptibility to complications arising out of minor infections, and slow recovery from illnesses.

In addition to causing poor physical health which impairs productivity, malnutrition tends to produce an unhealthy mental outlook which is readily communicated to fellow workers and spreads through an establishment in the form of petty grievances and general dissatisfaction.

Nutrition Program.—A nutrition program, as one phase of a campaign to improve the employee's health, falls naturally under the supervision of the medical department of an establishment. However, a nutrition program can be successful under the direct supervision of factory management if a medical department is non-existent.

Such a program falls into two independent but equally valuable parts: Meals eaten *away* from the plant; meals eaten *at* the plant.

If management provides a cafeteria for workers, the meals served can be planned to assure that workers will get at least one properly balanced meal per day. However, the best results will be obtained by efforts to improve both home and plant meals. Therefore, in presenting a nutrition program, management should:

Present the program either to the workers individually or through the Labour-Management Round Table, suggesting a sub-committee to handle the program, if advisable;

Explain the benefits of the plan to workers;

Give the authoritative background for the recommendations advanced to the workers;

Encourage active employee participation in its administration;

Limit its activity to supervision and policy making.

Management should bear the following points in mind before undertaking a nutrition program:

The worker will resent any interference with his home;

The worker will resent an effort to feed him "what he should have rather than what he wants" in the plant;

As with all management activities designed to improve the worker's efficiency but which require the worker's co-operation, management should avoid a paternal approach towards the worker.

Meals At Home.—The improvement of home meals is best effected in the following manner:

The distribution of practical information to the worker which he can take home for his wife's use;

Classes after working hours for workers, their wives and mothers;

Follow-up bulletins and posters to remind workers of the plan.

Meals In the Plant.—Industry has attained considerable success in improving employees' health by providing nourishing meals in the establishment. The type of service provided by management varies and, since this memorandum is addressed primarily to the smaller industrial establishment, the following suggestions are directed to this type of factory rather than to those employing thousands of workers.

Where facilities are available for serving regular meals, care should be taken to serve low-priced meals which include all the food elements needed for a balanced diet. In addition to this, efforts should be made to popularize the consumption of milk, whole wheat bread and cheese rather than soft drinks and doughnuts. This can be done by offering a ten-cent "special" that is more attractive to the workers than is the less nourishing "pop" and "sinks".

In addition to the serving of regular meals, nutrition deficiencies can be overcome by offering the right kinds of refreshment during rest pauses.

It is seldom possible to provide refreshment during rest pauses to all employees or to serve directly from the lunchroom in the short space of ten or fifteen minutes. However, by a system of staggered rest pauses it will usually be found practicable to cater to the full staff in two or three shifts. For example, a plant with 150 employees can arrange a ten-minute rest pause for three relays of 50 workers each. Refreshments for the first relay should be prepared beforehand and, during their rest pause, preparations should be made for the second relay in order to avoid all waiting and confusion. Similarly, during the second relay's rest pause, preparation should be made for the third relay of workers.

This system is practical mainly in those plants where employees are concentrated in a small area, and where all have easy access to the factory canteen. In others it may be desirable to serve only part of the staff in the canteen, using mobile wagons or refreshment stations to cater to the remaining workers.

Canteen or Cafeteria Not Essential.—Many small industries have felt that the lack of canteen facilities within their plants automatically prevents the serving of refreshments to employees. But numerous small plants, whose only facility has been a gas ring or an electric plug-in socket, have been able to provide their employees with both hot and cold drinks during rest pauses, supplemented at times with light snacks such as biscuits, chocolate bars, or even sandwiches brought by the worker in his lunch box.

Mobile Wagons.—These can be used for both snacks and meals, not only in plants having canteens but in those factories which have no refreshment facilities whatsoever. They can be constructed (often by the plant carpenter) to serve from 50 to 200 persons at one loading.

With a canteen it is a simple matter to load wagons with beverages and snacks direct in the kitchen and wheel them to key points in the plant where groups of employees take their rest pauses.

With no canteen facilities available, equipment for preparing and serving hot beverages can be obtained. This equipment usually consists of a water heater, either electric or gas, large containers for making the beverages in lots of one to five gallons, and utensils for serving such as mugs, etc. The mobile wagon can be loaded at a central point and wheeled to rest pause 'stations' throughout the plant.

Mobile wagons are also practical for providing refreshment direct to workers at their benches or machines in those cases where rest pauses are not possible.

Refreshment Stations.—In some plants it will be found practical to set up a refreshment and snack bar in a corner of the workshop. The food and drinks can be prepared either right at the counter or can be prepared outside the plant and brought to the counter for dispensing.

Use of Neighbourhood Restaurant.—Some small plants would be wise to consider the possibility of making arrangements with a near-by restaurant whereby well-balanced regular meals are made available at low cost to employees and refreshment for rest pauses can be prepared and brought to the plant for distribution. To facilitate delivery of rest pause snacks or box lunches, it may be desirable for the plant to provide the restaurant with certain pieces of equipment such as large containers and to provide its own drinking utensils, etc. It is desirable to arrange that the restaurant takes care of the maintenance and cleaning of such equipment and utensils.

General.—The layout of the plant and the nature of its operations naturally dictate the best method of serving refreshment; but, in general, an adaptation of one or a combination of a number of the above methods, after a period of experimentation, will be found to give satisfactory results.

**RECOMMENDATIONS BY THE NUTRITION SERVICE OF
THE DEPARTMENT OF PENSIONS AND
NATIONAL HEALTH, OTTAWA**

Industrial plant managements providing meals should employ or consult qualified nutritionists or dietitians.

Plant-managed food dispensaries should be operated on a non-profit basis or profits should be used to provide dietary aid to workers—as, free milk.

Between-meal rest periods should be provided with opportunities for workers to obtain food.

Milk, cocoa, fruit juices, or tomato juice are desirable beverages while low-nutritional foods and drinks such as soft drinks, candy and sweet goods should be discouraged.

Where the working day exceeds eight hours, more than one meal or lunch period should be allowed.

A serious effort should be made to correct faulty eating habits of workers. This may be done indirectly by food arrangements in company canteens and cafeterias as well as directly by educational methods.

Co-operation of plant medical services, cafeteria or restaurant management and the plant management is needed if this effort is to be a real success.

Plant managers should see that workers are offered nutritious meals at a price that they can afford to pay. Only nutritional and well-balanced combinations should be offered.

A suggestion is that special "Health Meals" made of nutritious food should be made available at special low prices so that workers will order them naturally. Similarly, milk should be sold cheaper than tea, coffee or soft drinks.

REFERENCES

The Industrial Division of the Health League of Canada has available plans and detailed information for both the education of workers to eat properly in their homes and the installation and operation of canteens in the establishment. This includes not only information for management's consideration but also prepared bulletins and pamphlets for distribution to employees.

Reference can be made to Dr. L. B. Pett, Director of Nutrition Services, Department of Pensions and National Health, Ottawa, and to the National Film Board for assistance on problems affecting the health and nutrition of the worker.

An extended report on the installation, management, and maintenance of lunchrooms is provided by "Lunchrooms for Employees" published by the Metropolitan Life Insurance Company, New York City.

Educational programs designed to interest the worker in the "whys and wherefores" of sound nutrition and to guide him in his eating are offered by the Committee on Nutrition in Industry of the National Research Council, Ottawa, in conjunction with the Canadian Gas Association and Servel Incorporated. The literature is made available by Servel through local gas companies to interested establishments.

Other programs have been developed by Westinghouse Electric and Manufacturing Company, General Electric Company, and the Wisconsin Alumni Research Foundation. Servel provides the most comprehensive program while Westinghouse and General Electric direct their appeals chiefly to the workers' wives. However, all programs are adaptable to the needs of the company concerned.

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INCENTIVE PLANS

A Remedy for the Following Basic Causes

- Low Wages
- Insecurity
- Monotony and Boredom.

Objectives.—The objectives of incentive plans may be classified as follows: to stimulate the worker who is producing below his capacity to increase his output to a normal level of efficiency, and to improve job methods to enable the worker to increase his useful output with the expenditure of the same amount of energy each day. If plans are acceptable to the workers, it will usually follow that useful suggestions for improved job methods will come from the workers themselves. Furthermore, under an incentive plan operation, management will become more conscious of the desirability of undertaking

additional Time and Motion Studies; the benefits from which may evolve gradually as distinct from a general realignment of operations.

Wide Potential Use.—Incentive plans have potential benefit where it is desirable for the establishment to produce either a larger or the same volume with fewer better-paid workers. In such cases, management can often afford to pay a bonus wage for the "plus" production of the individual worker because, within certain limits, increases in production are not accompanied by proportionate increases in fixed charges. These charges include rentals, maintenance, interest on capital and cost of operation of machines. Specifically, if a worker is able to raise the output of his machine from \$5,000 per year to \$6,000 per year, it will be possible for management to pay him not only the total normal labour con-

tent of the additional \$1,000 but also a share of the reduced production cost when overhead is spread over 20 per cent more output. It is safe to say that cases in which incentive plans can be applied far outnumber those where such plans would prove unsatisfactory. And, in this connection, it is interesting to note the popularity of incentive plans as indicated by United States surveys. Already in certain large and efficient industries over 50 per cent of the establishments are operating incentive plans. Some of these have been in operation for over two decades and have been maintained continuously through periods of high and low business prosperity.

Incentive Plans Not a "Cure-All".—While the majority of workers would like higher wages for their efforts, other factors, such as the attitude of the employer, and resulting benefits and privileges, are often more important influences on the workers. However, a sound wage incentive plan has proven to be one of the best and most generally applicable remedies for low productivity. It cannot, however, be usefully applied to build interest, diligence and high morale among workers. In fact, where poor industrial relations exist, it is advisable that incentive plans be deferred until mutual confidence and understanding between worker and employer have been established, for the success of such plans is in no small degree dependent on the full co-operation of the worker, the foreman and the executive.

Suggestions for the Smaller Operator.—Incentive Plans, with related Time and Motion Studies, have been the subject of a great amount of research and practical investigation in all of the industrial countries of the world and there is a wealth of information available from many types of enterprises. Two alternate courses are open if an investigation is to be undertaken:

Approach the problem through the Labour-Management Round Table as a co-operative venture, thus securing the initiative and suggestions of the individual operator and of the workers as a group;

Engage the services of an industrial engineer to make a survey and recommendations.

Attitude of Organized Labour to Incentive Plans.—While some workers and union locals have reacted to incentive plans with hostility and suspicion, there is evidence that, properly approached, labour's co-operation can be realized. For example, the CIO, in "Producing for Victory", says in effect that:

The worker should be rewarded by increased pay for increased output;

The worker and the union should be consulted in the formulation of incentive plans which should be easy for the worker to understand;

Standards of performance should be measured in units of time, preferably established through Time Study.

In this connection it is reported by William Hard that in a plant in Detroit there were union time-study men qualified independently to check the standard of production set for any worker's operation.

Standard and Bonus Wages.—It is generally agreed by management operating successful incentive plans that it is necessary to guarantee the basis for set-

ting the standard time or output rate. The workers clearly understand that there will be no deviation from an agreed standard or base rate, except in the event of change of type of unit produced, or for the introduction of new machinery, or for a good reason admitted as valid by the Round Table. Even in the simplest of smaller plant operations, various factors must be considered in addition to the study involved in arriving at a standard rate for each operation. These include: central planning of production; materials control; routing; fatigue studies to determine the amount of time off per period of work for rest pauses; also the time required for and cost of demonstration and worker training.

While many "systems" are devised by engineers for bonusing the worker on production, such as The Halsey Plan, The Rowan Plan, Gantt Bonus System, Diemer Bonus and Premium System, the Bedaux Plan, the Hayes Mani System, etc., it is usually quite feasible for management to develop a procedure suited to its needs. As an aid to such a procedure it is suggested that systems utilized in smaller plants be reviewed and that the books noted in the bibliography following be perused.

CASE HISTORIES

Quoted from "Factory Management and Maintenance", August, 1943.

One of the motivating factors of the incentive plan at *Lincoln Electric Company*, Cleveland, is the advisory board, established in 1914. This "board of directors for the plant" handles "all matters affecting the men and shop operations". It is composed of one representative from each department, elected by all members of that department, a foreman's representative, the plant superintendent and the president.

All productive work is paid on straight piecework rates, with the rates determined by job evaluation. Added to the basic wage, and paid at the same time (twice monthly) is a percentage based on a cost-of-living index selected by the advisory board and used since 1936. If the cost of living, as figured by the U.S. Department of Labor, goes up or down 5 per cent, the percentage added to the basic wage fluctuates by the same amount.

Overtime is paid at time and a half. At the request of the employees all the half-time wages for the hours over 40 worked in a week are retained and paid out at the end of the year with the incentive pay. If an employee is discharged or resigns, he receives his accumulation on leaving.

The incentive pay—paid in December each year—is paid in a lump sum included with the accumulated overtime pay. The amount of money available for distribution depends upon how successful the productive efforts of all have been. Every employee on the payroll before October 30, and still on the payroll on the date of payment, shares in the bonus, except the president and the chairman of the Board. Amount of share depends upon earnings and length of service.

Another accomplishment of the advisory board is making possible the purchase of company stock. Any employee with one year's service is eligible, and more than half the workers take advantage of the opportunity.

The company reports excellent results from the activities of the board, such as employee earnings approximately double those for comparable operations elsewhere, output per employee 300 to 600 per cent of

that in comparable industry, reduced selling price of typical products 13/15 and more, labour turnover reduced to practically zero, no labour union.

Quoted from "Reader's Digest", August, 1943.

In Detroit I visited a plant of the *Murray Corporation*, which makes frames for trucks and jeeps. There I saw a kind of man I happened never to have seen before. He was a union time-study man, elected to that job by the United Automobile Workers of the C.I.O.

He and four other union men, similarly elected, were trained in time-study for six months at the Murray Corporation's expense. To-day, when the company sets a "standard" of work, these union time-study men are qualified to check it. And they do whenever any worker complains.

This is fundamental. There must be standards. And management must set them. But the workers must surely have some sort of say-back. Only when both sides agree on the standards can the union do what it does in its Murray Corporation contract. In that contract it binds itself as follows: "Continued failure of an employee to produce on the basis of agreed standards will be considered due cause for discipline" and discipline can mean discharge.

Increased pay is calculated by the combined performance of all the individuals on the given group job.

How does that work out? For explicit testimony from a union leader let us go to another Detroit plant: *Continental Motors*. Continental makes motors for tanks. It has more than 7,000 production workers, all of whom belong to Local 280 of the United Automobile Workers. They work 56 hours a week—eight hours a day every day, including Sundays.

They have an incentive plan for group performance. Ed. Gallagher, former president of Local 280, says: "Every man in the group keeps an eye on every other man in the group. A worker who slows down is hurting his fellow workers. His fellow workers don't stand for it. And the union doesn't. The union steward checks on every unwilling worker and puts him on probation. The steward tells him to do better or lose the protection of the union. If he is drunk on the job, 15 days' layoff, if he is drunk twice, fired. We calculate that the company is plenty busy running the plant. We run the men".

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MEDICAL SERVICES

A Remedy for the Following Basic Causes

- Improper Nutrition
- Inadequate Lighting
- Poor Plant Housekeeping
- Personal Problems
- Poor Health

Effects of Poor Health.—A low standard of health among workers contributes materially to low productivity, low morale, abnormal absenteeism and even to labour turnover. Furthermore, employees who are below par physically are more prone to occupational accidents than healthy, alert workers. In any establishment where sickness appears to be responsible for a high rate of absence, it is in management's interest to institute medical services not only to deal with actual cases of sickness but to take suitable preventive measures so that the health of the staff will be maintained on a higher level.

Scope of Medical Services.—Medical services should not be confined to the treatment of physical ailments but should include:

Determination of the extent of preventable sickness responsible for absenteeism;

Disclose those cases where sickness is the excuse but not the real reason for absence, thereby assisting in determining the true cause of lost time;

Diagnose physical ailments which cause apathy and abnormal fatigue and which would not otherwise receive medical attention;

Assist in the analysis of physical and mental abilities of individual workers as an aid to proper placement.

Importance of Divorcing Medical Services from Management.—It is essential that the worker regard the medical staff as members of a profession and not as agents or employees of management. Only in this way will he have the same confidence in the plant medical services that he has in his own family doctor. Provided that the professional status of medical services personnel is not encroached upon and that it is clearly understood by employees that the medical department records of individual workers are not made available to management except with the free consent of the worker, the doctor or nurse can often discover the true reason for an absence more easily than could a foreman or plant superintendent. An interview by a doctor or competent nurse, either following an absence or in the absentee's

home, will frequently uncover not only the direct and indirect physical causes of absenteeism but also those psychological factors that affect the worker's mental outlook and his attitude toward his job. In this way, the medical services by using a general summary form with no reference to individual workers can perform a useful function in bettering industrial relations by making periodic reports to management.

Type of Medical Service Required.—The plant health centre must bear relation to the size of the establishment, the number of workers and the proportion of the cost of the health centre which management is able to assume. Large establishments can secure the full-time services of a doctor, one or more nurses and can establish a clinic or even a hospital. A small or medium sized plant can engage an industrial doctor and nurse on a part-time basis and, in some cases, a group of small establishments can collectively support the development of a health centre at a central location.

REFERENCE

The Industrial Division of the Health League of Canada has made a thorough study of the practical operation of medical services for industry. The League makes available to management specific and detailed information regarding the selection of personnel, their duties and the experiences of other plants that have installed Health Centres. From this source comes the following information.

The annual cost of Health Centre services is from \$5-\$10 per worker per annum.

After initial examinations a doctor will be required from 1 to 2 hours per week per 100 workers.

A nurse is required full time for 300 workers and over, and proportionately less for smaller establishments.

The services to employees are listed as follows:

- Pre-employment physical examination;

- Periodic physical examination;

- Emergency and first-aid facilities;

- Advice to employees suffering from non-industrial illness while at work;

- Education of employees in accident prevention and personal hygiene;

- Elimination or control of all health hazards;

- Adequate medical records filed in medical department under care of nurse with doctor's supervision;

- Supervision of sanitation and all health measures for employees by doctor;

- An ethical and co-operative relationship with the family physician;

- The use of approved hospitals in the community.

CASE HISTORIES

As to the value of a medical program the *British American Bank Note Company, Limited*, Ottawa, reports (according to James Montagnes writing in *Canadian Business*, August, 1943) that the plan involving free physical examination, inspection of home conditions, first aid, nursing service, and regular medical check-up

has helped and encouraged employees giving them new points of view regarding sanitation and hygiene with a resulting increase in personal efficiency.

R. A. Robertson, *George Weston Limited*, Toronto, says (according to James Montagnes in *Canadian Business*, August, 1943) "the employees do appreciate and co-operate with the medical department and it has been responsible for a considerable decrease in absenteeism and has also helped the morale of our employees".

Quoted from "*Plant Administration*" October, 1943. Conservation of manpower is of major moment on the industrial front. Out of the scramble to get new men or to retain those already employed some firms have evolved policies of "conservation" that might more accurately be called "appreciation" of manpower since these policies are premised upon a more humanitarian basis than is provided in the more "so much per hour for so much work" arrangements.

One such firm reaping appreciable dividends in increased production concurrent with an almost complete lack of employer-employee friction, because of this greater appreciation of their help, is the *Border Cities Wire and Iron Works* managed by W. F. Andrews, at Windsor, Ontario. This firm is engaged 100 per cent in war work and has been since the start of hostilities.

Three years ago free medical services was established for their employees inclusive of families. The plan worked so well that last year it was extended to include hospitalization. These two plans together with the "open-door" policy of the management towards its help have been directly responsible for less absenteeism, increased production and a fine spirit of labor-management co-operation.

Aside from the purely psychological values involved, their intrinsic worth can be measured by consulting the records. These show that, aside from men drafted for the armed services, only two employees have voluntarily quit during the war. Since the *Border Cities Wire and Iron Works* employs 100 people, mostly males, it can be seen readily that these schemes have had definitely beneficial results in minimizing labor unrest and, by reason of this, have allowed management to concentrate on production.

The free medical service to employees is a broad and comprehensive one. It provides doctor's services to all employees and to all members of employees' families at all times, including sickness and accidents contracted while away from the plant. It covers the employee, the wife (except in maternity cases) and the children regardless of number. It is paid for entirely by the company and is thought to be the only plant-fostered project of its kind in Windsor.

The plan has been remarkably efficient in reducing absenteeism due to sickness, particularly in seasonable epidemics such as ordinary colds and influenza. At a time when man-hours or the lack of them is a matter of national discussion this medical service is worthy of consideration.

Mr. Andrews said: "Due to our free medical service we have appreciably reduced our loss in production because of sickness. As a rule when a man has to pay for medical attention out of his own pocket he waits until the last possible moment to see the doctor. In

the meantime he is either working at 50 per cent efficiency or not at all. In either case he is a loss to us and he is not taking any steps to remedy the situation."

"Under our plan the man gets medical attention as soon as he needs it. In fact, I tell the men to go and get it. 'What is the use of my paying a doctor to take care of you,' I tell them, 'If you are not going to make use of him?'"

Employees have their own choice of doctors, considered important because people have more faith in some doctors than in others, and faith in a doctor means a shorter convalescence. Should it be found that the services of a specialist are required, these are obtained at the company's expense. His firm pays the doctor's bills and, in addition, if it is the employee himself that is sick, grants a weekly maintenance benefit of \$10.

The cost of the free medical service is ridiculously low in view of the material benefits the company gains. In Mr. Andrews' plant it has amounted to approximately two cents per hour per employee.

"So trifling that it does not matter", Andrews said. "I do not think that any of us would kick paying a man an additional 5c per hour to keep him on the job getting out production. Our medical service, which keeps the man on the job or gets him well enough to come back to it, serves the same purpose at much less cost. We derive greater benefits from it than if we paid it to the man in increased wages. Greater because it takes a load from our employees' shoulders and transfers it to ours and greater because it makes them think we are a pretty fair bunch to be working for. This last has a real value that we can't estimate in dollars and cents."

"I strongly urge that every concern in Canada give their men free medical service. It is a paying proposition".

The hospitalization scheme, unlike the free medical services, is not purely philanthropic although it may be that it is largely regarded as such by the employee.

For a contribution of 25c per week the employee and his family get complete hospitalization including the cost of a room, operation expenses, operating room fee and cost of anaesthesia. This cost is further subsidized by the company and is underwritten by an insurance company.

The plan gives the employee or member of his family hospitalization for a period of 70 consecutive days for any one disability. However, there may be several periods of 70 days in the year and there may be a number of varieties of disabilities that effect the one person. In such event the employee is still covered.

Andrews figures that hospitalization has cost him 18c per week per employee. He counts this cost as cheap insurance to guarantee him the manpower necessary to gain his production schedules and the goodwill of employees.

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MOTION STUDY

A Remedy for the Following Basic Causes

Foreman Mismanagement
Wasteful Effort
Monotony and Boredom

Definition of Motion Study.—Motion study is the matching of the worker and his task in an effort to obtain maximum production and earning power with a minimum of effort on the worker's part. It should not be confused with "speed-ups" for, unlike the latter, it is carried out with the object of reducing the effort required for a particular task so that by the expenditure of the same amount of effort a worker can complete the task more often in a given time. Motion study involves determining the minimum number of motions required to perform a specified task and determining the most useful sequence of these motions. In addition,

the basic elements of the task are determined and examined in an effort to simplify the task itself and by so doing (a) increase production and hence decrease overhead burden per unit, (b) increase worker's earnings without increased fatigue.

When to Make Motion Studies.—They are valuable not only as a guide in setting up new jobs but in re-engineering established jobs since, in many cases, the conditions of labour, material, and production volume on which the original engineering of the job was predicated may have altered making changes desirable in the "set-up" of the job. An occasional survey of all jobs from the point of view of motion study is valuable. The best "set-up" for a job from the point of view of motion study does not necessarily coincide with the best "set-up" from the point of view of business operation. Factors that determine the desirability of under-

taking motion studies and of making alterations in the "set-up" of a job to accord with the best practice include:

The number of man-hours per day and per year required for the task;

The relation between hand labour costs and machine costs including the wage rate, the ratio of handling time to machine time, and special qualifications required of the employee;

The investment in additional machinery required to "mechanize" output.

The field for motion studies is usually greater in small plants where there is no engineering department to carry out these studies and the supervisor, fully occupied with his routine responsibilities, has had little time to view objectively the tasks of the workers under his supervision. The application of motion study to complex jobs may require the services of an industrial engineer to produce the most efficacious results but, in most cases, the following principles can easily be used to good advantage by any foreman in checking the jobs and workers under his supervision.

While no attempt is made to describe the technique involved in the application of these principles to a complex job, it is felt that the following outline will be of value as a guide toward an appreciation of the fundamentals underlying motion study.

How to Make a Motion Study

Step One.—Study the job to determine the elements of the cycle of motions involved. These elements will be a combination of those listed below.

- (a) search
- (b) find
- (c) select
- (d) group
- (e) position
- (f) assemble
- (g) use
- (h) disassemble, or take apart
- (i) inspect
- (j) transport loaded
- (k) prepare position for next operation
- (l) release load
- (m) transport empty
- (n) wait (unavoidable delay)
- (o) wait (avoidable delay)
- (p) rest (for overcoming fatigue)

Having determined the elementary motions involved, restudy the job in view of the suggestions appearing under Step Two.

Slow motion pictures of the operator performing his task are a great aid in determining the motions involved in performing a task. The film can be run over slowly and the value of each motion established. Placing a clock in the background when photographing the operator both before and after the job has been restudied allows an accurate evaluation of time saved to be made.

The equipment and men required to make such photographic studies are readily obtainable. Most establishments will have amateur photographers on its staff who possess either a suitable movie camera or can operate a rented machine. If men and equipment can not be obtained within the establishment, they are normally available locally. The ordinary electric clock with a sweep "second" hand can be adapted to provide the timing equipment. The face of the clock should be covered with a white sheet of cardboard about 18 inches square, marked off into sixtieths and the "second" hand extended by fixing to it a straw dipped in black ink.

Photographing the operator has four advantages: The operator has to do his task under observation a minimum number of times; the operator and management can restudy the job together, thus developing the worker's interest; the job can be studied in greater detail and with greater accuracy especially those tasks which are performed too rapidly for the eye to register all the motions.

Step Two.—

1. Reduce all repetitive work to bench-work whenever possible.
2. All motions should be confined to the "Sphere of Normal Work", the "Sphere of Normal Work" being defined as the three dimensional area inclosed by two quarter-spheres described by moving the two hands above a tabletop with the forearms as radii and the elbows located slightly forward of and away from the ribs. Ideally, all motions are restricted to the area described by the forearms and wrists moving as above. The diagram below indicates how the "Sphere of Normal Work" can be determined in relation to the physical size of the individual worker.
3. Both hands should be used. Where possible they should work "against" each other in smooth, symmetrical paths, begin and complete their motions simultaneously and should not hesitate, change direction or speed suddenly.
4. The hands should be relieved of all tasks that can be accomplished more easily by the use of the feet, jigs, gravity bins, or conveyors.
5. The task should be so placed within the "Sphere of Normal Work" that the number of eye movements and the extent of eye movement necessary are at a minimum, and that the neck is as erect as possible.
6. Momentum should be employed to assist the worker wherever possible.
7. All tools and parts should be placed within the "Sphere of Normal Work".
8. Tools and parts should be located so that the sequence of the movements required by the task is unbroken.
9. Supplies of parts should be sufficient to last at least one hour and should be fed by "gravity flow". In this way they will always be located at the same point.

10. The number of different operations that are required of each worker should be reduced to a minimum. Of course, the practicability of this procedure is limited by the production desired; although if adaptable workers are available and if it is practical to use machines intermittently, workers may be shifted from job to job as they complete the quantities required.
11. The worker should be able to alternate standing and sitting positions at will. This requires the position of the task and the height of the worker's stool to be such that the task is always in the same position with respect to the worker's hands whether sitting or standing. The stool should be comfortable, variable as to seat heights, and when possible, equipped with an adjustable back support.

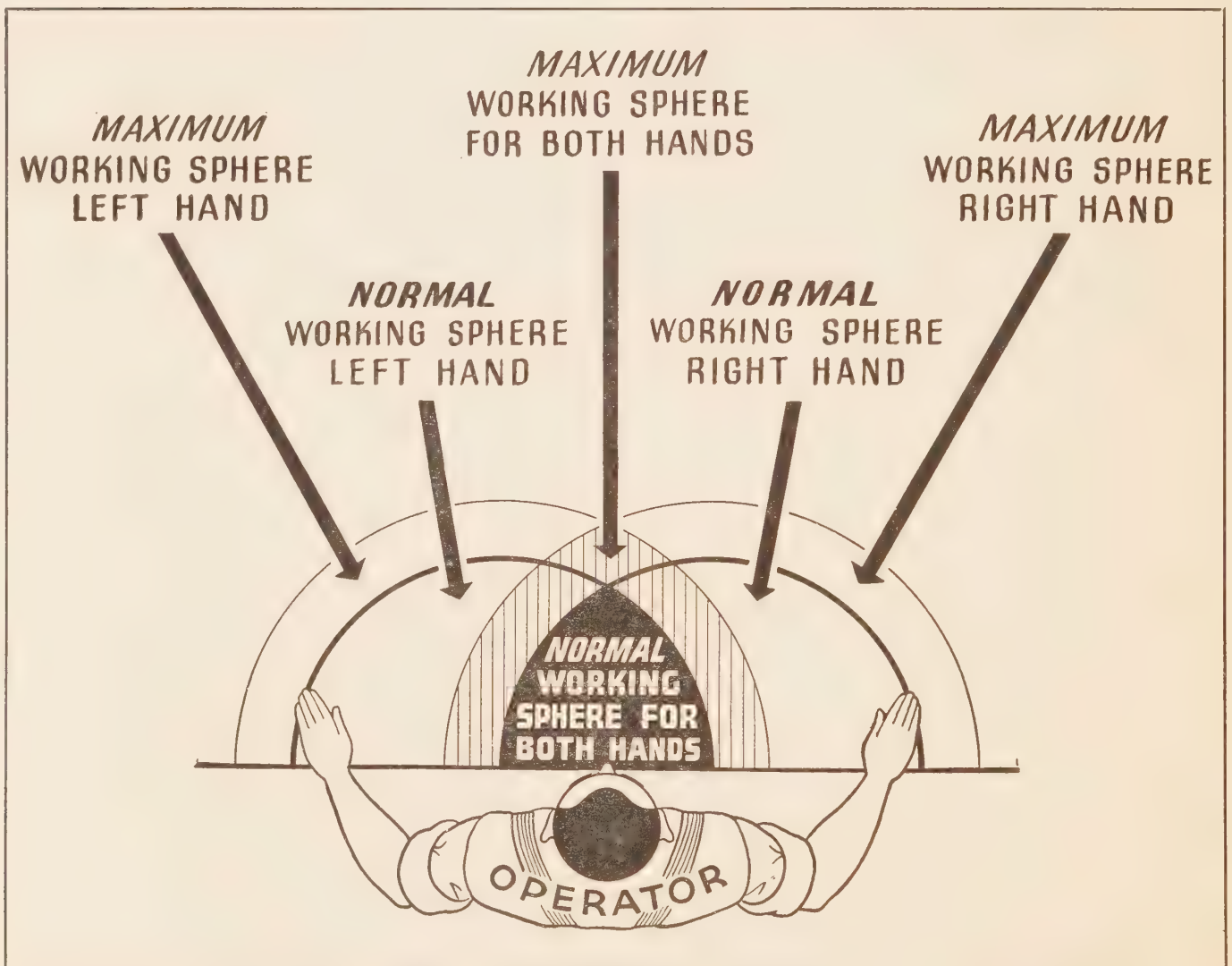
Step Three.—

1. When it is not possible to reduce the task to bench-work, the principles outlined in Step

Two should be applied to the leg and body movements of the worker.

2. If lifting is involved, the task should be examined in the light of the following suggestions:

Reorganize the task to eliminate as much lifting as possible. This may involve breaking the job down into several stages. Investigate the possibilities of using mechanical lifting devices. Arrange the work so that the worker does not have to lift above his height. Arrange task to shorten distances over which carrying is necessary. Instruct workers in the correct method of lifting. The most efficient position from which to lift is that in which the knees are bent and the worker is as close to the object to be lifted as possible with the feet 8" to 12" apart and the back erect. When in position, grasp the object with the hands keeping the arms fairly straight and use the leg muscles (not the back or arms) to do the lifting.



EXAMPLE OF AN APPLICATION OF MOTION STUDY

The following case history traces the steps in the re-engineering of a simple assembling job—the placing of a lock washer, a spacer, and a leather washer on a bolt. Before motion studies were made the job was being performed as follows: The worker sat at a bench with four boxes placed in a straight row in front of him. The boxes contained from left to right: Box A, the bolts; Box B, lock washers; Box C, spacers; and Box D, leather washers. The left hand removed a bolt from box A and, with the left hand holding the bolt, the right hand removed a lock washer from box B and placed it on the bolt; then from box C a spacer, and from box D, a leather washer was removed and placed on the bolt in succession by the right hand. Finally the completed assembly was dropped into a box by the left hand of the worker. Utilizing the principles previously stated the job was re-engineered as follows:

The four boxes were first re-arranged in a semi-circle in front of the worker at such a distance that all could be reached with a wrist and forearm motion. Thus arm motion was reduced.

The bolt was held by a simple jig leaving the left hand free. Therefore it became possible to assemble a second bolt with the left hand coincident with the right hand assembly. Hence, a second jig was placed on the bench for the left-hand assembly and a semi-circle of eight instead of four parts boxes placed so that the left hand worked from left to right and the right hand from right to left. Thus both hands were utilized simultaneously and symmetrically, working against each other.

The completed assemblies were released from the jigs by foot pedals and allowed to fall through the jigs to floor boxes, thus relieving the hands of two tasks.

Finally, the "supply boxes" were converted into "gravity bins," i.e., were tilted toward the worker so that parts were always the same distance from the worker; the bottom of the box was tilted slightly towards the worker, and a front cover placed so that the amount that spilled out was limited. Thus both hands were supplied automatically with parts without interruption and all motions were synchronized and smooth.

As a result of this application of motion study, production increased over 200%, workers reported less fatigue involved, and workers received greatly increased earnings with lowered costs to the employers. This procedure is clearly shown in a 16 mm. talking film "Motion Study Principles", available on request through the National Film Board, Ottawa.

CASE HISTORIES

Quoted from "Factory Management and Maintenance", August, 1943.

"Nine suggestions translated into production short cuts, picked pretty much at random from a list of hundreds received at *Murray Corporation of America*, Detroit, reveal savings believed to total the amazing amount of 200,000 man-hours."

"Typical is one worker's idea, which called for the use of "back-up" boards, and resulted in releasing an estimated 39,251 man-hours for other vital work. Formerly an extra worker had to hold a 2 x 4 against

wing tip skins during a drilling operation to keep the skin from buckling. The back-up board halved the force required. It holds the skins tight, producing perfect fit of the two overlapping skins."

"Requiring three hours and \$40 to install, a floor and work station rearrangement in the Flying Fortress nacelle beam assembly utilizes automotive techniques. Each workman's operation is specialized, thus releasing an estimated 48,100 man-hours in this one department. The same principle was used on an adjoining operation, effecting savings calculated at 39,251 man-hours."

A work simplification department has been set up at *Lockheed Vega* which, in addition to its own assignment to design ways and means of cutting corners to speed production, serves as a clearing house for ideas submitted by workers.

Employees are urged to submit their ideas if they (1) increase production; (2) reduce production cost or time; (3) eliminate or reduce hazards; (4) improve existing methods, either in the factory or in the office; (5) eliminate or reduce waste of time, materials, tools, or energy; (6) improve protection of property; (7) improve quality.

The application of motion study principles materially increased both man and machine productivity on a war job in the machinery division of the *Bigelow-Sanford Carpet Company*, Thompsonville, Conn., in the machining and pre-assembly of castings for location of holes necessary for assembly. It employed one machine operator and two helpers. The two helpers were assigned the tasks of positioning the castings, disposal of castings, and miscellaneous work; the machine operator drilled, reamed, and counterbored the castings with a radial drill.

A study of the original operation showed the machine efficiency to be low and the labor effectiveness to be equally low. Since the "get ready" portion of the cycle resulted in the low machine efficiency and since the helpers were idle through a large portion of the run time, it was a logical step to absorb these idle times by working on two sets of castings at one time.

The improved method provides for the set-up of two pieces by the helpers. The machine work shifts from one set of castings to the next to attain greater machine productivity.

The improved method has allowed for a 70 percent increase in machine productivity and a 41 percent decrease in man-minutes per piece.

A recent change in methods at *Scoville Manufacturing Company*, Waterbury, Conn., is perhaps an answer to the perennial question asked of people who handle work simplification programs: "Can work simplification principles be applied to small orders?"

In this company's press department a great deal of congestion was created by the processing of a rectangular shell, $4\frac{1}{8} \times 4\frac{1}{8} \times 6\frac{3}{4}$ inches. Greatest production on any one lot was 5,000 pieces. It was necessary to pack these shells in large wooden cases before and after each of seven operations.

The presses used were in various parts of the room. Material had to be transported between operations. As the operations varied in production per hour, a great deal of floor space was used for storage purposes, so much so that safety rules could not be observed.

Flow process charts indicated that presses should be re-arranged for straight-line production. This was done at a cost of approximately \$30. Wooden chutes were set up between presses. The sequence of operations was changed so that the higher productive jobs started and ended the flow of work through the press battery, to allow for the extra time for the unpacking and packing elements. Between presses the work was placed in the wooden chutes by the operator and pushed its own width, moving all the shells by that much.

Congestion was eliminated immediately. All toteboxes for intermediate storage between operations became unnecessary, and aisle spaces were cleared as though by magic.

More tangible savings resulted because of an increase in production made possible by the elimination of unpacking, packing and waiting for service between operations.

Costs were further reduced by a reduction in service required. Formerly four "move-men" were used; it is now necessary to use only two. Floor space saved was 150 square feet. Increase in production averaged 75 percent. There was a saving of 50 percent in indirect labour.

The new analytical laboratory of *Merck & Company, Inc.*, Rahway, N.J., embodies in design and layout many excellent examples of applied work simplification.

The work-bench of traditional design has given way to a cross-shaped one. With this arrangement each chemist finds himself with a L-shaped work table, making it possible for him to reach any part of it in a single stride. A desk in the fourth corner completes the rectangular work area. This again is within easy reach of any part of the work-bench.

Although the new work space is the same length as the old, the distances traveled from one point to another of the work table and to the desk were considerably greater with the straight bench. In the old method

the chemist walked along a straight line; now he uses the hypotenuse of a triangle formed by two parts of that line.

In addition to the saving in steps, the new bench design has also resulted in a consolidation of equipment. The clean glassware cabinet has double access and is used jointly by two chemists. The conventional fume hood has been replaced by a four-place one, located at the intersection of the cross bench. On each of the benches is a double reagent shelf, accessible from both sides. At the ends of two benches are individual sinks with hot and cold water and built-in waste receptacles. On each bench are outlets for gas, water, distilled water, compressed air, vacuum, and alternating current, all with double access.

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MUSIC

A Remedy for the Following Basic Cause

Monotony and Boredom

Advantages to Industry.—Although scientific investigation of the field of music in industry is as yet incomplete, the benefits resulting from its use in establishments in Canada, Great Britain and the United States indicate the advisability of considering its possibilities. Advantages reported include increased production, improved morale and reduced fatigue, accidents and absenteeism.

Industry is unanimous in admitting the last four points above, but the effect of music on production is indirect and difficult to measure. Some industries report noticeable increases in production, while others report no appreciable increase. However, those who report no appreciable increase in production are satisfied that music's other benefits warrant its use.

How Music Affects Workers.—Music produces a pleasant emotional experience which tends to alleviate boredom. It relieves fatigue by acting as a mental stimu-

lant and by offering relief from irritating or monotonous industrial noises. In support of the last statement, it has been shown that the ear tends to follow pleasant sounds and to reject disagreeable sounds when both sounds occur simultaneously. Hence, the introduction of a pleasing melody gives relief from an irritating industrial noise. Properly selected music does not distract workers from their tasks. In fact, by reducing fatigue and relieving boredom, it heightens the worker's reactions and increases his attentiveness. It also reduces the tendency of workers to talk to each other and, therefore, the loss of production, resulting from the worker's eyes being drawn from his task as is the tendency when he talks to a neighbour.

How to Install a Broadcasting System.—Music can be relayed to the working areas of an establishment through a Public Address system. In addition to broadcasting music, the system can be advantageously used for paging, announcements, time signals and fire alarms. In small plants the system is usually run by the telephone operator or a plant clerk.

Installations cost from \$250 up depending on the size and nature of the plant; but much less if built up from good second-hand radio and phonograph parts by a skilled amateur. The advice of a musical technician is desirable in determining the correct placing, size and type of loudspeakers as well as the type and tempo of music to be played. It is important to have a dependable installation and to avoid using worn-out records. A haphazard or faulty installation badly played will prove a liability rather than an asset. The use of a radio or cheap gramophone is not recommended. To cite two points: (a) the music must cut through the plant noises but not attempt to drown them out by sheer volume, or the noise would be unbearable; (b) Scratchy, blurred music causes irritation.

What Kind of Music.—The sources are recordings and radio broadcasts. The type and tempo must be carefully determined with respect to the predominating age, sex, tastes and nationalities of the workers as well as the plant conditions and tasks involved. It has been found that very slow music tends to retard production while workers resent very fast music regarding it as an attempt at a "speed-up." Familiar tunes have been found less distracting than unfamiliar tunes, and simple, clear-cut rhythmic melodies "come through" plant noises better than do involved arrangements.

How Much Music.—A total of from one to two and a half hours per day played in groups lasting from twelve to twenty minutes has been found best for most establishments. The music should be typed and tuned to correct the workers' reactions when production is lagging. Thus, fast, sparkling music as a morning opening helps the workers to "warm up" to the day's work. Fatigue periods should be determined and stimulating music with a steady beat played to counteract it. Between shifts, at lunch periods, and during rest pauses relaxing music is useful. Playing music during the last half-hour of the work spell is not advisable as workers tend to interpret it as a signal to get ready to quit.

Aids to Management.—Advice with respect to installation and equipment can be obtained from firms manufacturing public address systems or from the Radio Manufacturers' Association of Canada, Toronto, Ontario.

REFERENCES

Extent of Use.—In Great Britain, following the mandatory installation in 1940 of Public Address systems in all war plants to serve as air-raid warning devices, the B.B.C. made daily musical programs available to all plants. It is reported that the majority of plants so equipped now use the B.B.C. service.

In the United States, the number of plants using music rose from 500 in April, 1941, to over 3,000 in July, 1943. The audience is estimated to have passed 6,000,000 workers.

CASE HISTORIES

Quoted from "Canadian Business," June, 1943.

Canadian Marconi Company.—"We provide music in our plant by means of an automatic record player over a public address system. It is played for 15 minutes in every half hour and the plan was inaugurated about eight months ago. We plan our own programs and

have a special employees' committee who select and purchase records based upon requests from workers. Our people like it very much and seem to count on it. If anything goes wrong and they do not get the music on time, they soon ask for it. We don't think it has helped to increase production but it certainly has helped plant morale."

Defence Industries Limited.—"Believe we were the first in the Montreal area to broadcast music to workers. Started about a year ago by playing records over the plant's public address system. This was unsatisfactory, from an administrative point of view; so we shifted to "piped in" programs. Presently we are engaged in expanding its use to other plants and various departments. Everybody likes it, both men and women, and they complain if the music doesn't come through on schedule. The music is played for twenty minutes in each hour right through all shifts. It is particularly aimed at women employees who spend hours sitting at monotonous jobs on repetitive work, which is where we find music produces the best results. So far not a single employee has objected to the music. Apparently some who may not care for it seem to be able to tune it out of their minds. We have just had a request for music from the machine shop division. It appears there was an area near the machinists which was served with melodies and they grew to like it. We have not scientifically measured if there has been an increase in production; however, we think the lift and build-up music gives to morale and contentment can't help but increase production."

Aird and Son Ltd.—"In the short time that it has been in operation we note that the employees, especially women, are quieter at their tasks; there is much less talking, and more concentration on the work at hand. Everything seems to point to an increase in production, in our opinion."

Fairchild Aircraft Ltd.—"On the night shift, we have noted an excellent reaction in morale and the music seems to give our employees a lift between the high fatigue hours of four to six a.m. Benefits of the music to date are an improvement in morale, relief of fatigue, and the creation of a pleasant atmosphere. It may help to cut down absenteeism."

Quoted from "Reader's Digest," September, 1942.

A New York mailing service piped in music and offered a bonus to hasten a rush job. Output shot up twenty per cent. The rush over, the bonus was dropped but the music was retained. Production still kept a ten per cent lead. With music, fifty-five clerks in a Minneapolis Post Office made thirteen per cent fewer errors in handling the heavy Christmas mail.

In 1925, **Westinghouse** was testing some loud-speaker units in its Newark, New Jersey plant, playing popular tunes from a phonograph pickup. After the tests, workers on nearby assembly jobs missed the music and requested it be resumed. The hat was passed for records, and programs went on twice daily. They still do. A few other firms took up the idea through the year; but World War II put it over in a big way.

Workers' Opinion.—As reported by S. Wyatt and J. N. Langdon for the Medical Research Council of the

Industrial Health Research Board of England in 1937 to the question—"What do you think of music?" workers replied:

"It makes the work better because you talk less."

"The music helps to take your mind off your troubles."

"If you are on a bad job, the music most certainly helps you to forget it and stops you from grumbling."

"It brightens things up." "It makes you more cheerful and lively."

"It takes you out of yourself."

"It makes you look forward to coming to work."

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Melody on the Production Line.—M. F. Goldenberg, Canadian Business, June, 1943. Case histories.

PENSION PLANS

A Remedy for the Following Basic Causes

Low Wages

Insecurity

Unaccustomed Prosperity

The fundamental purpose of a pension plan is to provide a fund for the worker's old age, and therefore it must be a long-term plan to discourage the worker from using the funds until he has reached a predetermined age or condition. While pensions are a type of saving plan, in that they involve a deduction from the worker's income, there is a basic distinction from savings that are of a liquid character. Bank savings, stocks, bonds and real property may be among the worker's own savings to provide for his old age. However, these savings are so liquid that there is no assurance and, indeed, little likelihood that the worker will not draw upon them before retirement age. Furthermore, from the employee's viewpoint, management has a moral responsibility to contribute to his support during the non-productive years after a long period of faithful service.

Management Acts as Trustee.—It is generally accepted that a company contribute part of the cost of providing the individual worker's pension fund and often the company share is equal to that of the worker. Under such a plan the company may act in trust and can discourage the premature use of the funds. For example, provision may be made that if the employee voluntarily leaves his job after only a few years' service he may receive only his own deposits plus interest on leaving the payroll. In fairness to employees, however, it is usual in such cases to add to this a small percentage of the company's contribution after the employee has served a certain number of years, percentage increasing with length of employment. Other adjustments will be required for cases where a worker leaves as the result of ill-health or incapacitation.

Immediate Benefits to Management.—In addition to fulfilling the moral obligation to provide for the retirement of a loyal employee, there are immediate benefits to sponsoring a pension plan. If, during his working years, an employee realizes that his old age will be provided for, he will prove steadier and more productive. Furthermore, because of this stability, and because he must forfeit his pension when leaving his place of em-

ployment, there is a strong incentive to remain with the company rather than to seek other employment offering greater immediate income but not old age protection.

Several Principles to be Decided.—It is not possible to outline a "typical" pension plan since there are many factors in each establishment that must be considered before any plan is evolved. In considering a retirement program, the management might start the investigation by deciding upon the scope of the plan and the amount of pension per worker wage dollar. Provision may be made for the plan to apply only to those employees who have completed a certain number of years service or only for those earning within a certain range of salaries. Other questions to decide are: Is the plan to be co-operative between employer and employee, or is the fund to be developed by the employer alone?

The long-term financial commitment for the company is a vital factor in any plan whether it be entirely company-financed or involves a company contribution.

Smaller establishments may not have adequate financial reserves to undertake a long-term fixed annual commitment but may find it practicable to set aside a fixed percentage of profits each year to be matched by an equal or proportionate outlay by the workers. If this type of plan is adopted, it is evident that it will not be possible to predetermine the amount of annual retirement income that the worker will receive but the fund can be dispensed over a pre-arranged number of years.

As a variation of this approach, the worker may pay a fixed amount each year to which is added a fixed amount and a fixed percentage of the profits of the company. Thus the minimum annual retirement income can be determined and a bonus fund set up from profit contributions.

As a further alternative some employers have made available a co-operative plan for stock purchase. For example, after stipulated lengths of service the worker may purchase specified amounts of stock in the company at a fixed price to be redeemed by the company when a worker leaves at not less than the price paid. In this way the company participates by assuring the worker that if he takes advantage of this opportunity he will have an assured sum of money at retirement age. This stock is frequently held in trust for the worker, and may

have certain prior dividend rights over the regular common stock. These dividends may be distributed or added to the fund. As in the case of pension plans, it is possible for the worker to redeem his share of the contribution but the company will only make a contribution if the plan is carried to maturity.

A Specialist is Recommended.—It is generally agreed by management having experience with pensions that plans should be designed and managed by an outside specialist, rather than conducted by the company itself. There are exceptions to this belief and successful records can be shown of company-managed programs. However, there are enough cases of plan failure under company operation to warrant a caution to smaller plants undertaking self-operation.

Under the provisions of 1941 Amendments to Income War Tax Act are certain privileges designed to encourage pension plans. At the discretion of the department an amount equivalent to 5 per cent of the employee's salary or \$300 (whichever is lesser) when paid by the employer into a pension fund is exempt from taxation; and an amount not exceeding \$300 retained by the employer from the worker's income for the same purpose is also exempt from taxation. (Section V, subsection (f), (g) Income War Tax Act 1941.)

The Annuities Branch of the Department of Labour, Ottawa, co-operates with individual firms in setting up and operating pension plans. Under the Annuities Branch's pension plan, if the employee dies before reaching retirement age, the total employee contributions with interest at 4 per cent per annum compounded yearly are returned to his estate. The employer contributions accumulating at the same rate are available for disposition at the will of the employer.

Annuities are payable for life only, or life with a guarantee that payments will be made for 5, 10, 15 or 20 years in any event. Furthermore, annuities providing for the continuation of payments to another person can be provided. The benefits, if any, on occurrence of death after retirement will depend upon the type of annuity used.

Examples of pension benefits are outlined below:

CANADIAN GOVERNMENT ANNUITIES
MALES—RETIRING AT AGE 65
February—1944

Exact Age At Entry	Total Contributions (as a percentage of Earnings)				
	6%	7%	8%	9%	10%
20.....	70.4%	82.2%	93.9%	106.0%	117.0%
25.....	55.2%	64.4%	73.6%	82.8%	92.0%
30.....	42.8%	49.9%	57.1%	64.2%	71.3%
35.....	32.6%	38.0%	43.5%	48.9%	54.4%
40.....	24.2%	28.2%	32.3%	36.3%	40.4%
45.....	17.3%	20.2%	23.1%	26.0%	28.9%
50.....	11.6%	13.6%	15.5%	17.5%	19.4%

As previously stated it is not possible to outline a "typical" pension plan. However, some highlights of an actual insurance company plan are noted as a stimulant to the thinking of management considering this benefit.

Male employees are eligible after 3 years of service; females after 5 years.

Worker's contribution 5 per cent of salary; company's contribution 5 per cent of each contributor's salary.

The normal pension age to be the 65th birthday of the employee.

The pension to be paid in monthly instalments until the last due date before death, and if the pensioner dies before 10 years of payment, his dependents will be paid the amount for the balance of the 10 year period.

An employee may retire before age 65, accepting a lower immediate pension consistent with the earlier age and fewer number of paid premiums.

The employee may take a cash option at age 65 with the consent of the corporation.

In the event of death before pension age, payments of both company and employee plus interest will be paid to the dependents.

The employee leaving the company may take over his paid-up share of the pension either as a cash settlement or as a continuing plan to the amount of his individual contributions.

The company has the right to discontinue its contribution with 6 months notice.

The plan is based on 75 per cent employee participation.

In this company the following hypothetical individuals have subscribed to the plan to secure the indicated benefits.

Individual	Age	Total Annual Premium	His Share	At age 65 Annual Pension	Cash Value
A.....	29	150	75	\$ 815	\$ 9,500
B.....	40	515	257	1,500	18,000
C.....	48	370	185	1,330	8,100
D.....	60	260	130	118	1,400

From the foregoing hypothetical cases it will be seen that, in a co-operative plan, an employee may, by contributing 5 per cent of his income, make adequate provision for his non-productive years, and that with the 10 year guarantee can be sure that his wife will have an income between the ten years of his life expectancy from 65 to 75 years of age.

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PERSONAL PROBLEMS CONSULTANT

A Remedy for the Following Basic Causes

Foreman Mismanagement
Incompatibility with Job or Fellow Workers
Apathy and Frustration
High Proportion of Women Workers
Personal Problems
Poor Housing
Unavailable Day Nurseries

Management's Concern in the Worker's Personal Affairs.—Much of this report deals with management's interest in the causes of and remedies for manpower loss in terms of the conditions surrounding the worker during the time he spends in the plant. However, adverse influences surrounding the home life of the worker may upset him and the plant industrial relations plan may be nullified and the worker's efficiency reduced. Therefore, progressive management is taking a practical interest in the personal affairs of workers.

The Role of the Personal Problems Consultant.—To handle such problems, it is suggested that a member of the executive staff act as Personal Problems Consultant. This officer should consider his activities as a highly confidential service to the worker and he should ensure that any suggestion of paternalism or unsolicited interference in the worker's private affairs is carefully avoided. Thus, the worker must feel that his troubles will be treated in confidence and that he alone has the privilege of bringing them up. The individual representing management must be understanding and qualified to speak authoritatively. The divulgence of the private affairs of the worker should only be made with the concurrence of the worker and when it will have no undesired repercussions on the employee's standing with the company or with his fellow workers.

Plant Doctor or Nurse as Personal Problems Consultant.—The Plant Doctor or Nurse is the logical appointee for personal problems consultant. In their professional capacity they are concerned with the mental as well as the physical health of the worker, and in the normal course of their activities will often uncover difficulties and worries which arise from causes outside the plant.

Top Management's Interest Needed.—While many problems will be beyond the scope of direct treatment by the doctor or nurse, the trouble can be assessed and, with the consent of the worker, referred to management with recommendations for handling. Not infrequently worry is relieved through an opportunity to discuss the cause of the worry with an understanding person and, in other cases, a few words of advice may prove of real benefit. Physical ailments and diseases can be recognized and treated and consideration given to the suitability of the worker's job with respect to his health and temperament.

While it is recognized that certain problems will be either insoluble by management or outside its scope, the experience of managers who have made a practice of encouraging the worker's confidences has indicated that many workers who appear maladjusted or undisciplined have been bothered by some persistent and often minor problem that it is in the employer's best interests to

resolve, and that when assistance is given, a complete reversal of the worker's attitude results. For example, family differences and sickness frequently cause upsets, as do problems of shopping, child upbringing, domestic relations, transportation, housing, etc.

It has been suggested that the company nurse or doctor is the logical channel through which to develop this service. However, the lack of a medical officer does not preclude the establishment of a Personal Problems Consultant. The manager or his deputy can provide this service for a small establishment.

REFERENCE

Quoted from "The Management Review," November, 1942.

Personnel workers have always assumed some responsibility for helping employees solve personal problems which interfere with their efficiency. Their counsel, however, has tended to be incidental. Now management has begun to see the necessity for a definitely planned counselling service and personnel administrators are experimenting with various approaches to the problem.

It is obvious that there can be no standard pattern for an employee counselling service. The best approach will naturally depend on the size of the company, its background and the personalities involved. But in any case there are certain fundamental principles to bear in mind:

(1) The individual functions as a whole and his efficiency on the job will depend on his total adjustment to life. An employee who is having serious marital difficulties or who is harassed by a burden of excessive debts or who habitually drinks himself into a stupor night after night will be unable to maintain the pace on the job. While management cannot assume responsibility for directing the lives of its workers, even if it knows how, it must appreciate that job success or failure presents a complicated pattern and that maximum efficiency on the job depends upon a reasonably good total adjustment. Acceptance of this point of view immediately suggests that, within limits, management must assume responsibility for this adjustment. The most natural approach is through a program of employee counselling.

(2) The need for counselling arises when the individual is confronted with problems which he cannot solve satisfactorily without help. No personnel administrator wants to intrude on employees' private lives. For the most part the service should be for those who seek it voluntarily, although it is permissible to allow the supervisor to refer those in difficulties to the counsellor.

(3) The function of counselling is to help individuals help themselves. Counselling does not consist of telling people what to do. Even if the counsellor is immediately certain what the solution to a client's problem is, he should go slowly until the client understands it himself and develops a plan for solving it. One test of a counsellor's success is whether or not his clients become increasingly self-sufficient.

(4) Effective counselling is dependent upon adequate data. Employee counselling will get off to a bad start if

it is undertaken by a person who depends on inspirational advice rather than on careful analysis of problems. The interview should be the basic technique, but the counsellor may wish to supplement this with psychological tests, efficiency ratings, conferences with supervisors and fellow workers, medical reports, or even a social case history investigation. And the more he knows about the company, the personalities involved and the community itself, the better qualified he is to serve as a guide.

(5) The counsellor should hold what the client tells him in professional confidence. Certain situations may be discussed with management or with the client's fellow employees, provided there is a judicious selection of what is to be divulged and what is to be kept in confidence. But let a counsellor get the reputation of talking too much and his usefulness is gone.

(6) Effective counselling requires a proper setting. Incidental counselling of a conversational type may be done casually in the hall, at the worker's desk, in the shop. But when the problem is acute and of a personal nature, it is essential that there be privacy and freedom from distraction. The counsellor should have a private office with an adjoining reception room.

(7) Counselling cannot be completely centralized. A wise counsellor will use the services of the supervisory staff as far as possible, confining his personal efforts to the more difficult cases.

(8) The employee counsellor needs professional training. Employee counselling is so new that a specific college course cannot be recommended. However, courses in the following fields would probably be useful: social psychology, abnormal psychology or mental hygiene, psychological tests, personnel psychology, techniques of guidance, techniques of counselling, sociology, statistics and labour problems. The more the counsellor knows about personnel procedures generally the better qualified he should be, but no amount of professional training will make a good counsellor out of one who lacks certain basic qualities: understanding of people, fairness, sincerity, good judgment, common sense.

(9) The employee counsellor must know when to refer the client to a specialist. Even though the counsellor is professionally trained, he will frequently encounter problems which call for the help of a physician, a psychiatrist, an attorney or a spiritual adviser. He should be familiar with the expert services available in his community.

(10) The counsellor's work can be more effective if it is preventive rather than remedial. Supervisors and counsellors must be on the alert for symptoms of incipient maladjustments and take prompt steps before it is too late. The counsellor should also watch for conditions within the organization which tend to produce inefficiency and maladjustments, and should bring them to management's attention.

RECREATION

A Remedy for the Following Basic Causes

Monotony and Boredom
Lack of Recreational Opportunity
Poor Health

"All Work and No Play" Costly to Management.
—Diversion from work is essential to the maintenance of health and for relief from the monotony of many plant operations. Thus, over-fatigue and morale are directly affected by a worker's week that does not include recreation. A high rate of absenteeism due to ill-health or boredom may result, and a tendency for the worker to look elsewhere for more compatible work can cause abnormal labour turnover.

Manager Should Not Ride His Pet Hobby.—However, as in other programs designed to improve the well-being of the worker, plans for recreation should be considered as an outgrowth of, and not a means to, good industrial relations. There is no reason to believe that a single outing or continuing plan conceived solely by management will result in an improved attitude towards the employer, or a sudden improvement in company "team spirit". In fact, it is possible that workers may resent the expenditure of the money meant by management to be a generous gesture. Pet projects of management, in which a small number of expert employees participate, and which the remaining employees are expected to support as spectators, may cause unrest and jealousy in the organization, thereby defeating at least the stated purpose of the employee plan. Management should not

confuse a personal desire on its part for a winning hockey team carrying the company's colours with an inter-department bowling league that might be the desire of the majority of the workers.

Employees Themselves Should Plan Company Recreation.—A recreational program falls naturally into the Labour-Management Round Table sphere as the plan will prove most successful when developed, organized and operated by employees. Case examples indicate that such plans are most successful if largely self-supporting; management contributing some financial assistance, assisting with the formulating of policy, and aiding in the procurement of playground and building facilities. Since recreational activity should be largely self-supporting, planning in various diverse directions may be found advisable in order that all employees may be participants rather than spectators.

Recreation Takes in a Wide Field.—The definition of "recreation" is "any undertaking for which no pay is received and to which no compulsion is attached". Activities may include not only those designed to refresh the body but those that refresh and stimulate the mind as well. Thus the planning may be considered under the following broad headings:

Physical activities—skating, bowling, picnicking, etc.;

Social activities—card games, dancing, etc.;

Smokers and Cultural activities—musical groups, camera clubs, first aid, etc.

Management Should Inspire, not Direct.—While emphasis is laid on the necessity of avoiding paternalism, recreational programs require inspirational guidance. An individual with such qualifications may be found on the payroll of the establishment. In larger establishments a Recreational Manager may be appointed. Smaller units may find it advisable to secure part-time specialized assistance at least in the early formulation of plans. Frequently there will be organized a Recreation Club with elected officers under whose guidance will be developed recreational activities. There is an advantage in conducting such an organization according to accepted procedure since it is found that participation in such meetings is in itself of interest to many employees.

Vacations.—With excessive fatigue, the quality of work may suffer, a high accident rate may develop, and a tendency towards higher absenteeism and labour turnover may arise. In recent years progressive management has provided one to two weeks' vacation per year for workers and, not infrequently, with part or full-time pay for those who have been with the company for a certain number of years. Industrial physicians strongly support a two-week vacation from a health standpoint, and there is a growing disposition among employers to regard vacations as an important contribution to the morale of the worker. The remaining 50 to 51 working weeks of the year usually produce a daily output in quantity and quality that offsets the cost of the two-week absence.

REFERENCE

According to *Factory Management and Maintenance* (Aug. 1943) the employee should participate in the recreation program and, wherever practicable, the program should include all types of recreational activity from bridge to baseball so that everyone can take part in the program.

CASE HISTORIES

The *Iron Shipbuilders Union of Canada*, Local No. 1, is offering a wide variety of sports, social functions and educational facilities to its 15,000 members for 5 cents a month (Hugh Rose, *Globe and Mail*, Aug. 15, 1943). The main object of the plan is a mass recreational, social and cultural movement for the benefit of the general membership and not for the few who excel in any particular activity. However, one of the chief objects of

the plan is to keep workers physically fit and to prepare those leaving lighter work for the heaviest work of shipbuilding.

The *Woodward Governor Company*, Rockford, Illinois does not believe in sponsoring recreational facilities but does provide facilities that employees may use if they wish. However, the Company does give Saturday night parties for workers, families and "dates". Free soft drinks, popcorn and sandwiches are made available. The parties alternately offer dancing, games and movies. (*Factory Management and Maintenance*, August, 1943.)

Vega Aircraft Corporation, Burbank, California, has a "Laugh and Stretch" program utilized during the training period to teach women the proper exercises to overcome fatigue and to help get them in physical shape for unaccustomed work. Vega believes that the exercises are more efficacious if the women are first relaxed by getting them to laugh (*Factory Management and Maintenance*, Aug., 1943).

The *General Electric Company* donated the land and erected the club buildings used by the General Electric Athletic Association, while maintenance and operation are covered by membership dues supplemented by gate receipts from shows and dances held at the clubhouse plus one dollar per year per member. In the Company's Pittsfield Works square dances are held daily at noon to music provided by plant employees (*Factory Management and Maintenance*, August, 1943).

To relieve managers of the risk of courting disfavour in settling disputes, General Electric has a "Czar" for each sport (*Management Review*, August, 1942). The "Czar" is usually a company employee who is an expert in the activity which he supervises, although he may be someone from outside the company—such as a newspaper sports writer. The Czar gives a decision from which there is no appeal.

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REST PAUSES

A Remedy for the Following Basic Causes

High Proportion of Women Workers
Improper Nutrition
Monotony and Boredom
Lack of Recreational Opportunity
Night Shifts
Excessive Hours of Work

A worker's vitality is gradually reduced as the day progresses. This is reflected in his productive output. There is, however, evidence that properly conducted,

well controlled rest pauses, even though necessitating a reduction in actual working time, generally result in increased production through reduced fatigue, lower accident rate and improved morale. The vitality of those engaged on work requiring concentration, physical effort or long terms of repetitive motion can be appreciably revived by a ten or fifteen minute break in each half-shift. Properly applied rest pauses will prove advantageous in combating listlessness and fatigue, carelessness and apathy.

However, the good effects of the rest pause can be nullified if proper organization and control are lacking.

In such cases, employees will take undue liberties and the practice will become abused. A ten-minute rest pause, haphazardly organized, is apt to develop into twenty minutes of lost time with no benefit either to management or employees. It is essential that, once a rest pause is inaugurated, strict observance of rules be enforced.

Where Rest Pauses are Practical.—Rest pauses are practical in almost any industry where machines can be shut off temporarily, or where it is not essential to maintain unbroken attention to the running of machines. Even in continuous operations, however, a system of relays can usually be arranged, whereby employees normally engaged on other work can relieve essential machine operators for a short period.

Rest pauses do not interfere with assembly line operation provided that the pauses are staggered to avoid any possibility of bottlenecks developing.

Frequency and Duration of Rest Pauses.—The number of rest pauses per shift and the amount of time allowed for each break depends primarily on the type of work being performed by employees.

Continuous heavy physical labour and work under necessarily arduous conditions generally benefit from frequent rest pauses of short duration. In some industries where heavy labour is required it is often the practice to allow a five-minute break every hour. These frequent breaks reduce excessive physical fatigue and the employee is thus able to maintain a higher flow of work throughout the day without undue strain.

The monotony of repetitive work can be broken by rest pauses mid-way through each half-shift. At this time the employee's production rate is usually on the decline and a short break in his work can help to restore his vitality and increase his rate of output. The duration of the rest pause in such cases is generally ten minutes but longer breaks are desirable if the total work shift is unduly long, or if employees are allowed to go out for exercise, fresh air or refreshment.

Fatigue manifests itself in any type of work, and even in clerical and stenographic activities it will generally be found that one rest pause during the day, e.g., ten minutes allowed mid-way through the final half-shift, will prove beneficial to both management and employees.

How to Use the Rest Pause.—The primary object of the rest pause is to restore the worker's energy. This can be done by relaxation or by diversionary activity.

If the worker is engaged on tiring work, physical relaxing is desirable. Comfortable restrooms where workers can sit or lie down are ideal for this purpose, but even where restrooms are not available management should make it as easy as possible to benefit from the recess.

Music can be used to marked advantage during the rest pause. Even in plants which are not specially wired for providing music during actual working time, a radio or phonograph can be employed for workers engaged on light monotonous tasks. Mental diversions are often more helpful than physical relaxation.

Fatigue resulting from working in one position or from the continual use of the same muscles can be relieved by exercise. These can be in the form of mild calisthenics conducted in the plant or shop.

Smoking should be allowed during rest pauses. This is especially important in plants or shops where smoking is not permitted during working time. Management should arrange for special rooms or sections of the plant to be designated for this purpose during rest pauses.

Bad ventilation contributes to abnormal fatigue and sickness. Where ventilation is poor and cannot be improved, it is important that employees be allowed to get out of doors. While they are outside, the shop should be thoroughly aired by opening all doors and windows.

Refreshment During Rest Pauses.—It is common practice to provide facilities for refreshment during rest pauses. This adds to the value of the break since it provides nourishment and stimulation to the worker, particularly those who are in the habit of eating extremely light breakfasts. A full discussion of the problem of serving refreshments will be found under the heading of "Improved Nutrition."

What Refreshments Should be Served.—*Milk* is easy to provide as it needs no preparation and provides food value.

Tea and Coffee.—These beverages both provide mild stimulation although they have no food value. Plants without canteen facilities can purchase at little cost equipment for preparing the beverages or can arrange for a neighbourhood restaurant to provide them.

Soft Drinks.—Many workers prefer "pop" to other types of beverages. Cooling machines or ice boxes are readily obtained from most suppliers of soft drinks for a modest rental. Care should be taken to place all bottles in a common receptacle or to have them collected by an employee as loose bottles are dangerous.

REFERENCES

"It is of vital importance that there should be adequate breaks for all workers during which the management should endeavour to provide easy facilities for the workers to purchase refreshments likely to restore their physical and mental vigour. It is suggested that a break interval of ten minutes duration might be introduced near the middle of the normal working period. For some cases other arrangements, for example, a break in each hour, may be preferable."

Ernest Bevin, 1940.

"In considering the introduction of systematic rest pauses, it should not be assumed that, if no rest pauses are formally allowed, the employees will not rest. Several investigators have shown that if formal rest pauses are not allowed, unauthorized rests will be taken by employees to suit their own convenience."

Industrial Psychology, Tiffin, 1942.

"Organized rest periods help maintain production at a high level. Five to fifteen minute rest periods should be provided at the end of the first quarter and again at the three-quarter mark of each shift. This is especially important in repetitive, monotonous work or heavy manual labour. Smokes, drinks, sandwiches and candy should be available during the rest periods."

United States Public Health Service.

CASE HISTORIES

Quoted from a survey made by The Industrial Division, W.P.T.B.

Sovereign Potters Ltd., Hamilton.—W. G. Pulkingham, President, reports that his plant, which employs over 250 workers, has instituted ten-minute rest pauses in the morning. The workers are divided into three groups. The first group recesses at 9.20, the second at 9.30 and the third at 9.40. No restrooms have been provided but refreshments are served in the plant canteen. Tea is served for five cents a week and cake and sandwiches are also available. However, most employees bring their own sandwiches. Mobile trucks were used when the rest pauses were first organized but Mr. Pulkingham reports that they did not work out. Music is provided by radio during rest pauses. Mr. Pulkingham says he considers that the employees' morale is raised, their fatigue is reduced, their accident rate is lower and production has increased since the rest pauses were instituted.

Northern Electric Company, Montreal.—Mr. W. B. Chave, Personnel Manager, reports that his company, which employs 7,500 workers, has instituted 10 minute rest pauses with up to 5 minutes travelling time to enable the workers to reach the canteen. The rest pauses are staggered by departments with all the employees in each department recessing at the same time. Restrooms are provided and the company canteen sells soft drinks, sandwiches, candy and cake. Office employees are served from mobile trucks. There are electric phonographs in some of the canteens. Mr. Chave says that employees' morale has been raised, their fatigue has been reduced and the accident rate has fallen since rest pauses were begun but it is doubtful if production has increased.

Lucien Bougie, Montreal.—Mr. Bougie reports that his company, a shoe manufacturing plant which employs 125 workers, instituted 15 minute rest pauses in 1935. Employees recess at 10 a.m. and 3 p.m. and are provided with restrooms. Milk is served in the plant and music and news are relayed to the workroom by radio. In

addition, recreation is provided during rest pauses. Mr. Bougie feels that employees' morale has benefited, the accident rate is lower, fatigue is reduced and their production increased by the rest pauses.

The Crouse-Hinds Co., Toronto.—Mr. C. F. Graham, Chief Accountant, reports that his company employs 370 workers and has instituted 10 minute rest pauses at 10 a.m. and 3.30 p.m. All workers recess at the same time and restrooms are available. Tea is supplied by the company in the afternoon to all employees from mobile wagons. In the morning half-pints of milk are supplied by the company to workers in the Foundry, Grinding and Plating departments. A corner store brings in candy, cigarettes, soft drinks, etc., and sets up two stands in the plant from which employees make their purchases. Music is provided during the rest pauses. Mr. Graham states that employee morale has benefited from the rest pauses, that they have reduced fatigue and the accident rate and that production has increased.

American Pad and Textile Co., Chatham, Ont.—This company which employs 265 employees, has two ten-minute rest pauses per day, one at 10 a.m. and one at 4 p.m. Each of the three departments recesses at a different time. There are no restrooms but the employees are allowed to move freely about their departments. Milk and soft drinks are served from mobile wagons. The company reports that morale has been raised and fatigue reduced but that no increase in production has occurred.

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REVISED HOUR STRUCTURE

A Remedy for the Following Basic Causes

- Excessive Hours of Work
- Low Wages
- Lack of Recreational Opportunity
- Night Shifts
- Poor Health
- High Proportion of Women Workers

An abnormally long working week, except for short periods of emergency, will not result in a proportionate increase in production. In fact, the hourly production rate may actually fall off to such an extent that total real output during the longer working day becomes lower than during the normal day. In any event, the worker unconsciously adapts himself not only to the length of the working day but also to the length of

the working week. For example, the seven day working week is generally conceded to be less effective than the six day week. In fact, some industries have found the five day working week to be more satisfactory than the six day week.

Every industrial establishment would be well advised to examine its hour structure in the light of the great changes which have occurred in the industrial field during the past few years, including the employment of a greatly increased percentage of female help. All industrial establishments should periodically review working hours to ensure that they are those which produce the maximum from the types of workers presently employed.

No rule can be laid down by which to determine the optimum hours for all types of production since industrial conditions vary to such a tremendous extent. How-

ever, one method of determining the hours which result in optimum productivity is to compare the relative hourly and total output of the present hour structure with the hourly and total output of experimental hour structures. As an example, the following table (from *Industrial Health in War*, The British Industrial Health Research Board, 1940) shows the relative output of 56 men engaged in heavy work in a munitions factory when working varying hours:

—	Average of Actual Hours of Work	Relative Hourly Output	Relative TOTAL Output
First Period.....	58.2	100	100
Second Period....	50.5	122	106
Third Period.....	51.2	139	122

The table indicates that for the factory shop in question the apparent optimum working week was 51.2 hours, since both the hourly and the total output were considerably less when longer and shorter hours were worked.

By similar experiments Canadian manufacturers can determine the best hour structure, not only for the plant as a whole, but for each department. The period of trial for experimental hours must be long enough for a fair comparison since it takes time for employees to accustom themselves to changed hours. The minimum trial period is one in which output becomes stabilized, i.e., when there is no further "trend" in output per hour or per week. Revised hour structures must not lower the earnings of employees. A revised schedule which adversely affects income would obviously be resented and might result in reduced production.

Constructive suggestions on revisions of working hours can generally be obtained through consultation with employee representatives and the union and through the Labour-Management Round Table.

CASE HISTORIES

Quoted from a report of a survey made in July, 1943, by the Industrial Division, Wartime Prices and Trade Board.

C.I.L. at Brownsburg reduced hours from 70 to 60 per week without any loss of production.

Anaconda American Brass Company furnished some production figures for the plant under different work schedules; in 1935 hours were reduced from 50 to 40 per week and in 1937 they were stepped up again to 45 per week. The maximum production per man-hour was obtained with the 45 hour week and, with one exception, the maximum production per man-week was the greatest. In one department the production per man-week was slightly greater with the 50-hour week.

The *Imperial Oil Company* adopted a 40-hour week in the depression years which has now been stepped up to 44 hours per week. They believe this gives the highest efficiency even with continuous production processes.

Canadian Acme Screw and Gear Company furnished a record of fuse production for a period of 14 months. During the first seven months with three shifts of 8 hours per day the maximum production of 96,760 fuses was

reached in the week of December 5th. In the succeeding seven months the same plant operated with two 10-hour shifts per day and in the last week in July reached a production of 97,000 fuses. On the face of it, two 10-hour shifts are equal to, or better than, three 8-hour shifts. It must be borne in mind, however, that there was a continued drive for high production and the cumulative effect of this drive offset the reduced number of hours and longer shift.

Goodyear Rubber Company thinks that the 8-hour day and the 48-hour week is quite long enough in their business.

Babcock, Wilcox, Goldie and McCulloch, due to increased demand for production, increased working hours to 66-70 per week but found that sickness was definitely increasing so they reduced the hours to 50-55 per week. No one is allowed to work over 60 hours per week.

At *Canadian Westinghouse* hours are limited to 55 per week, for women on night work 50 hours, and women on cranes 48 hours per week. Are able to hold about 60 per cent of workers, balance keeps turning over. Trouble mostly among young people. As evidence of the value of a day of rest the manager reported that in Civic Holiday Week, although they did not work on the holiday, the Gun Division turned out 2 guns more than in any previous week. Absenteeism varies from 3 to 6 per cent.

The *National Steel Car Company* is now working a 48-hour week under the union agreement. Production is better now with the 8-hour shift than under the longer hours previously worked.

Dominion Forge and Stamping Company believes a 5-day, 40-hour week is the optimum for a drop forge plant. They are working 48 hours due to pressure for production.

At *Canada Packers* the regular work day is 8½ hours, 48 hours per week, night hours 9 per night, 54 per week, with overtime as fluctuations demand. Mr. Willis thinks workers can stand 60-70 hours per week for a couple of weeks, or 60 hours for about 4 weeks, without harm. If continued, fatigue results and efficiency drops.

Dominion Bridge plant works 8-hour shifts, 56 hours per week with one day off every third week. Some work a 9-hour shift, 7 days or 6 nights per week. The manager, Mr. Perriton, thinks they would not lose any production by cutting hours to 48 per week.

Canadian International Paper Company works 8-hour shifts, 48 hours per week in the mill and 10-hour day, 60 hours per week in the yard. Mr. West, Plant Manager, thinks 48 to 52 hours per week should be maximum.

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SHOPPING FACILITIES

A Remedy for the Following Basic Causes

- High Proportion of Women Workers
- Personal Problems
- Shopping Problems

The manpower shortage during the war period has introduced to industry a considerable percentage of women workers who are normally occupied in domestic duties. The married woman worker, who normally devoted a substantial part of her time to the purchase of foods and to comparative shopping, is now confronted with the problem of procuring her family's needs during her off-hours from the industrial plant. To-day, with earlier store closing hours, congested transportation facilities, and goods in short supply, the working housewife is often forced to take time off from her work in order to obtain the primary needs of her home. It is understandable that, no matter how much she likes her industrial job and no matter how conscientious she may be, her family takes precedence over all else. If she can be given assistance in her shopping problem, management will benefit not only from decreased absenteeism, but also from the psychological effect of reducing the worker's worries about her family's problems.

Plant Shopper.—The appointment of a plant shopper can be helpful in reducing this problem, particularly in the everyday requirements of the housewife. The plant shopper can either be a full-time or part-time job, depending upon the size of the plant and the extent to which the service is used.

The worker can arrange through the plant shopper for the delivery of goods direct to her home or to the plant. If delivery is made to the plant and payment has to be made, this can be done by the plant shopper and collected from the worker when she picks up the goods at the end of the working day. To avoid misunderstanding and mistakes all orders given to the shopper should be in writing and it is desirable to provide a form for this purpose.

Further, the plant shopper can take care of any goods ordered by the worker direct from her home, but delivered to the plant when workers' homes are vacant during the whole working day.

Provision of "Shopping Hours".—The appointment of a plant shopper, while helpful, is not in itself

a complete solution to shopping problems. It does not provide the buyer with the opportunity of pre-examining the goods—of major importance except in routine shopping—nor is it satisfactory to those workers who have to fill long "week-end" shopping lists. Furthermore, there is the question of those appointments which can only be kept by the worker personally.

The re-arrangement of working hours on certain days of the week to provide time for shopping is a logical solution to such problems. For example, on one or two days of the week it can be arranged for workers to take an extended lunch hour, making good the lost time either at the beginning or end of the working day. Local shopping conditions should be taken into consideration when deciding the day or days for re-arranged hours and the actual time when shopping hours are granted. In some districts, for instance, it may be more desirable to allow the workers to shop in the morning in order to obtain a better selection of goods. Further, the location of the plant in relation to the shopping area should be taken into account when deciding upon the length of time to be allowed for shopping to ensure that the worker has adequate time both for shopping and commuting.

Co-operation of Local Board of Trade, etc.—Joint appeal by a number of small industrial plants to the local Board of Trade or to municipal authorities can often succeed in special arrangements being made to keep certain shops open after hours to cater to industrial workers, to re-open certain stores for short periods on stipulated days of the week, or to provide a staggered hour system for stores so that certain types of goods will be procurable for longer periods of the day.

Plants which, on diagnosing their manpower loss, find that shopping problems are a material factor, would be well advised to consult with neighbourhood establishments and to enlist the aid of local authorities. Discussion of individual and joint problems will often pave the way to mutual understanding, co-operation and assistance.

Value of Round Table.—The value of the employee's viewpoint and suggestions is obvious in this particular instance and management would be well advised to make full use of the Labour-Management Round Table before making any final arrangements to assist the family woman in her shopping problems.

SICKNESS AND ACCIDENT BENEFITS

A Remedy for the Following Basic Cause

- Insecurity

Sickness Possibility a Major Worry.—Surveys of workers' opinions reveal that security is listed as an important requisite of a job. Security includes a number of possibilities, not the least of which is financial protection during periods of incapacitation either of the worker himself or of those for whom he must provide a living.

Management is often morally if not legally bound to aid a faithful employee in distress. For this reason

alone it would be wise to set up standard arrangements so that the company can budget its outlay for workers' benefits from year to year.

A company derives several benefits from the operation of a good policy that will protect the worker during illness or incapacitation. A worker who knows that he can weather the financial stress brought about by physical disability is usually more useful and apt to stick to his present employment. It is true that the Workmen's Compensation Act has provided for pay-

ment to workers for absence and medical services caused by industrial accident or illness, but this protection only meets a part of the insurance needs, and, while Federal Legislation is under discussion for national health insurance, sickness and accident plans have long been favourably accepted by many employers as a company project.

Small Plants Should Consult an Insurance Company.—There are examples of larger companies where sickness and accident benefits have been successfully underwritten by the corporation itself. In such cases, assessments have been made at a specified rate and the fund administered by management, often in conjunction with the representatives of labour. This procedure has not always been successful and, when applied to individual small companies, has a definite disadvantage. When the risk is not spread over a large number of variously employed persons located in several regions, a local outbreak of illness might jeopardize the fund. Therefore, in the case of medium and small companies, it is suggested that casualty companies specializing in group accident and sickness policies be consulted. Various plans are available through such companies and also through non-profit Medical Service Plans now operated in some sections of the country.

Workers are Consulted.—Consistent with the principle of avoiding paternalism, it will be found that the matter should be brought up at the Labour-Management Round Table before policy is decided upon by management. The alternate proposals of insurance concerns and the company itself should be put before the Labour-Management Round Table for discussion and consideration in order that representatives of the workers become familiar with the details and purpose of the plan.

The company will usually have to share in the cost of the insurance to bring the premium charges within the means of the majority of the employees. It is desirable that the worker pay the premium fixed for the benefits offered and graded according to pay income brackets, and that the premium be deducted from his weekly pay.

In addition to insurance for medical services during a sickness or accident not covered by the Workmen's Compensation Act, other benefits for the worker and members of his family are often included. Such benefits are:

A payment of income to the worker during his absence;

Hospitalization;

Life insurance lump sum;

Life insurance instalment.

Promoting the Plan.—To ensure full understanding and co-operation, it is advisable that a description of the plan that is finally decided upon be distributed to all employees by a team of volunteer workers capable of explaining procedure and securing worker co-operation. Points to be covered should include:

An announcement of the co-operative plan by the company;

A schedule of benefits;

General availability to all employees without medical examination;

Description of weekly benefits in case of non-occupational accident or non-occupational sickness;

Description of hospitalization and pregnancy benefits, outlining charges and maximum period of payment for hospital room, operating room, anaesthetics, laboratory service, X-ray and surgical fees;

A description of the Death Benefit, both lump sum and instalment;

A description of nursing service available;

Other details and information regarding application for enrolment;

A schedule of benefits such as described in the following illustration.

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Employee's Average Weekly Earnings	Weekly Sickness and Accident Benefit	Daily Hospital Benefit	Depen- dents	Incidental Hospital Expenses	Depen- dents	Lump Sum Payment in event of Death	Monthly Payment for 1 year after death	EMPLOYEE'S WEEKLY CONTRIBUTION		
								Without Depen- dents	With 1 Dependent	With more than 1 De- pendent
Less than \$20....	\$10.00	\$3.00	\$2.50	\$15.00	\$12.50	\$400.00	\$50.00	.35	.50	.60
\$20—\$40.....	15.00	4.00	3.00	20.00	15.00	400.00	50.00	.45	.64	.77
\$40 plus.....	20.00	5.00	3.50	25.00	17.50	400.00	50.00	.55	.77	.92
	—1st day for accidents	Maximum of 70 days for any one disability		No Limit		Both effective concurrently				
	—4th day for sickness			Maximum surgeon's fee—\$150, including childbirth						
	—maximum period 13 weeks									

While these figures are based on actual cases, the schedule is a composite one and is put forward only as a basis for discussion.

SPECIAL TREATMENT FOR WOMEN WORKERS

A Remedy for the Following Basic Causes

- Foreman Mismanagement
- Incompatibility with Job or Fellow Workers
- High Proportion of Women Workers
- Poor Plant Housekeeping
- Rules Violation
- Night Shifts
- Personal Problems
- Shopping Problems

Women have a definite place in industry and have proven more satisfactory than men in certain types of work. The proof of this statement lies in the upward trend in employment of women in industry over the last quarter century. Canadian census records reveal that a gradually increasing proportion of industrial workers are women. This trend, together with the increasing total employment in industry, points to the necessity of readjusting industrial practices to realize the greatest benefit from this increasingly important type of industrial worker. Census figures show the growth in number of females employed in industry to be:

1911	300,000;
1921	426,000;
1931	548,000;
1941 (Preliminary Census Bulletin)	700,000.

Estimates prepared by the Research and Statistics Branch of the Department of Labour show that the number of female industrial employees rose from 522,000 in August, 1939, to 928,000 in September, 1943, and stood at 743,000 in January, 1944.

The Permanence of Women Workers.—It is the opinion of some economists that the number of women employees will drop shortly after the war to a slightly higher figure than 1939 and that the pre-war upward trend with respect to female workers will be resumed. In any case, the sharp increase in the number of women workers employed during the war period intensified interest in production analysis and many establishments modified their operations through greater job breakdown, process simplification, and adjustment of working conditions to allow for the lower physical reserve of female workers. Some employers have already made the necessary psychological provisions for the proper treatment and handling of women workers and it may prove desirable for many employers to make a permanent place in their organizations for a greater proportion of women employees. If management anticipates such a condition, it would be well advised to examine its present handling of female help in the light of the experience of other establishments already enjoying a satisfactory relationship.

The Qualifications of Women Workers.—The following summarization of women's industrial capabilities is generally agreed upon:

They are more adapted to and contented with repetitive work than men. Thus, a higher percentage of women may be classified as static workers.

They perform better at simple operations.

Under proper conditions and direction, their output of work requiring light manual dexterity, sharp eyes, delicate touch and exactness is usually better than that of men.

A Need for Separate Consideration.—Establishments employing a large percentage of women know from experience that the best results are obtained when a different approach is applied to the training and disciplining of male and female workers. In general, women are more contented with and adaptable to light, repetitive work than are men; but they are more strongly influenced by poor plant conditions and inconsistent discipline. Women employees should have their own representative channel to top management. This may be a female assistant to the Personnel Manager, a registered nurse, or a senior woman employee who is willing and qualified to present the workers' viewpoints to management, and to interpret management policy to the workers. In any case, management should give special study to its industrial relations with the female staff.

The following points are noted from the experience of individual management with women:

They require more detailed and exact instruction in training;

In general, they will respond better than men to an emotional appeal to company or team spirit;

Personal loyalty is a notable characteristic and one which may prove either an asset or a liability in production;

There is a need for close personal interest in her work and counsel for her problems in the plant;

Owing to less emotional stability, there is a need for calm, cool, sympathetic supervision;

There is the sex angle to consider, giving women protection from annoyance from fellow workers or foremen; certain types of women will cause trouble with male workers;

Care should be taken to control waste of time from chatter and gossip;

More attention should be paid to lavatories and restroom facilities;

Pregnancy should be reported at an early date in order that work can be arranged accordingly and leave of absence should be given six weeks before birth of a child and two months after;

Persuade a woman to wear the right clothes and she usually has fewer accidents than a man doing the same task;

Rest pauses with a drink or food are required by women more than men;

Emphasis should be laid on periodic lectures and group meetings to maintain interest and morale.

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Miscellaneous differences between men and women as quoted from *Reader's Digest*, September, 1944.

Nine times out of ten, when a woman's efficiency drops off, it is because of something outside the plant. In the case of a man it is something inside.

The average woman would rather stay on a familiar job with fellow workers, a foreman and a routine she is used to than be promoted, if promotion means changing to a new environment. A man is eager for any change that means getting ahead.

Women take brusque criticism much worse than men. Reproofs must be sugared up: "You certainly do a wonderful day's work when you are here, Jane—now why can't you manage to get here oftener?"

Competition, with prizes, stimulates men and often lifts a whole department's output. It is just bad medicine for women. They become tense, get too excited—and those who fall behind become so discouraged that they stop trying altogether and do worse than before the contest.

The too pretty girl is just a nuisance. If she does outstandingly well and the foreman promotes her, the other women interpret his motives cattily. If she is reprimanded, she is likely to take it as a personal affront—she's so used to getting away with murder when she turns on the charm.

Rough kidding in the bluff, hearty manner that goes over big with men won't do at all with women. They want the courtly touch.

Happily married men make better foremen than bachelors. Maybe they have more savvy about women; maybe it's just that their daily attitude, consciously or subconsciously, is different.

Women are more willing than men to admit mistakes and to ask advice. But they will do badly on a job in which they have to make decisions. There should never be two ways to do an operation which a woman worker performs. It takes her too long to make up her mind which course to follow.

All these observations add up to one broad but really not very surprising conclusion:

Women are primarily interested in being women. Their interest in any other kind of success runs a bad second. Maybe it could be said with equal truth that men are primarily interested in being men—but being a man *includes* making good in a man's world. Being a successful woman seldom includes that at all.

Working for wages is something a woman does *until*:—until she finds the right man, until the baby comes, until her man comes home, until Joe makes more money, until their home is paid for, until the war is won. Exceptions? Yes, thousands of them—but the average woman in a war plant longs for the day when she can stay at home.

Of practical importance are various odds and ends: Women do not work well with tools that require rotary motion, such as screwdrivers. (Try to explain that one.) Keep them off high platform jobs; their sense of balance is poor.

They are faster and better than men on light, rhythmical jobs.

Investigation of man-girl trouble among employees showed the woman the aggressor, or initiator, three times out of four.

Extracts from "*When You Hire Women*," Women's Bureau, United States Department of Labor.

Sell the idea of women workers to present employee staff—the foremen and men workers.

Survey jobs to decide which are most suitable for women.

Make adaptations of jobs to fit the smaller frames and lesser muscular strength of women.

Provide service facilities in the plant to accommodate anticipated number of women.

Appoint a woman personnel director to organize and head a woman-counsellor system.

Select women carefully and for specific jobs.

Develop a program for the induction and training of women.

Establish good working conditions.

Supervise women workers intelligently.

Give women equal opportunity with men.

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STAFF AND JOB ANALYSIS

A Remedy for the Following Basic Causes

Foreman Mismanagement
Improper Ratio of Worker Types
Wasteful Effort
Apathy and Frustration
Monotony and Boredom
Night Shifts

During periods of labour shortage industry is forced to employ sub-standard workers. However, at the termination of a period of labour shortage such as that which occurred during the War, an employer may look forward to improving the quality of his staff by letting out sub-standard employees and hiring those better qualified for the work. To accomplish such a shift in personnel it is obvious that an intelligent analysis of staff and the job they do is necessary if the best results are to be obtained. Quite aside from such a rebalancing of the working force, much benefit can be derived from proper arrangement of personalities and temperament within a staff organization. This too can be realized most fully through the application of proper methods of job and staff analysis.

Definition of Staff and Job Analysis.—Staff and job analysis involves:

Analysis of each employee to determine his temperament and capacity;

Analysis of the plant's job requirements in terms of each particular operation, and the number of employees needed to do more than one job.

Staff Analysis.—Staff analysis requires determining the number of workers on the staff who fall under the following headings:

Static Workers.—The static worker is temperamentally suited for repetitive operations. While not necessarily devoid of ambition for financial improvement, he resists efforts to move him to a supervisory position or to train him to perform tasks other than his present one.

Mobile Workers.—The mobile worker finds repetitive work monotonous and performs best when his duties are varied. He is capable of and eager to learn additional tasks.

Potential Junior Executives.—Potential junior executives are recruited from the mobile workers. They are the most ambitious and apply themselves unusually well to their jobs. They perform best if given an opportunity for advancement. They form a pool of partly trained men to fill vacancies as they occur and are useful to management as group leaders.

How to Analyse Staff.—Staff analysis is a complex and continuous operation since no individual "types" into an exact category. For example, it is not necessarily true that a worker who has conscientiously applied himself to a repetitive job is not anxious to improve himself or is not capable of handling more difficult tasks. Therefore, the classification of the worker requires an

intimate knowledge of the worker. A combination of the methods of classifying workers outlined below has been found most efficacious for industrial use:

1. Have the workers classified yearly by a group consisting of

Management;

The worker's foreman;

A representative of the Labour-Management Round Table;

The worker concerned.

Prior to an interview, a record of the worker's accomplishments and attendance should be prepared. The worker should present a list of all his skills and vocational interests, aided by a list of all jobs performed in the plant. The foreman can report on his observations of the worker's ability. The worker's view may be inhibited or not crystallized. However, the worker's representative may be able to give guidance, especially if the worker has discussed his problems and difficulties with the representative. Before conducting these interviews, management should assure the worker that it is not a "black book" and that all previous records are destroyed each year when the analysis is made.

2. Analyze the worker by means of aptitude tests. For a full discussion of methods see "Aptitude Tests".

3. Prepare a "Staff Analysis Sheet" for each worker to be used in placing workers in the most suitable job. See p. 81 for a sample sheet.

Job Analysis.—Job analysis is finding out all the facts about a job for the purpose of preparing a written description of the job. The steps involved in making a job analysis follow:

1. The foreman should prepare a description of each of the jobs under his supervision broken down under the following headings:

Physical aspects.—The job is performed standing, sitting, walking, bench, floor, hand lift, crane lift, etc.;

Surrounding conditions.—Dusty, noisy, hot, fumes, etc.;

Psychological conditions.—The job is repetitious, monotonous, variety, pleasant, etc.;

Experience required.—A full description of the practical experience required of the operator;

Education required.—Operator required to read scales, micrometer, blueprints, etc.;

Worker's mental characteristics required.—The worker is required to be patient, deliberate, quick, thorough, accurate, careful, etc.;

Worker's physical characteristics required.—Age limit, height, weight, strength, etc.

2. The above information should be supplemented by the foreman's comments relative to the type of worker he feels would be best suited to the job.

3. Prepare a "Job Analysis Sheet" for each job. See p. 82 for a sample "Sheet".

EMPLOYEE RECORD CARD

Name

Address

Born Age..... Married..... Number of Children..... Dependents.....

Birthplace..... Nationality.....

Birthplace of Father..... Mother.....

Union Affiliation

Schooling	No. of Years	Graduated		Special Education			
		Yes	No.				
Common School							
High School				Languages Spoken			
College				Military Experience	Yrs. of Service	Rank	
Technical							
Trade, Night or Business School				Last employed by No. of years service			
Main Occupation			2nd Best Occupation			3rd Best Occupation	
Applies for			Rating Trade Tests			Rating Steno. Typ. Clk.	Date

Physical Notes

Impressions of
Interviewer

[illegible]

JOB ANALYSIS SHEET

Title of Job.....

Department.....

Under immediate supervision of.....

Weekly Wage.....

Hours start A.M..... finish P.M..... start P.M.....
 finish P.M.....

Repetitive..... partly repetitive..... versatile.....

Advantage to have a static..... mobile..... worker

Sex.....

Strength: husky..... average..... unimportant.....

Reflexes: fast..... average..... unimportant.....

Eyes: excellent..... average..... unimportant.....

In what respect is job particularly fatiguing.....

Is job self-sufficient..... teaming.....

Supervisory.....

Possibilities of advancement.....

CASE HISTORIES

*Quoted from "Factory Management and Maintenance",
 August, 1943.*

The use of aptitude tests in the selection and placement of inexperienced women for factory work is a wartime development at *Sperry Gyroscope Company, Inc.* Before the war, machining and assembly work on Sperry instruments was performed by highly skilled mechanics.

As reported by J. H. Coleman, employee test supervisor, the testing program had to be designed to meet several problems simultaneously. At the start it was not possible to test for specific jobs. Tasks formerly done by one skilled man were in process of being separated into units, each of which could be mastered by one inexperienced woman. New instruments created different types of new jobs. As more men left for the armed forces, women had to take their places on the more difficult operations and in group supervisory positions. Finally, only a limited time in the employment routine was available for testing because there were so many jobs to be filled.

Factory work for women consists of two main classes—relatively routine tasks which can be learned quickly because they depend largely upon manual or finger dexterity, and jobs of a higher degree of skill or specialization for which some systematic training is essential.

The problem, then, was to set up a battery of tests which, in a short testing period, would distinguish aptitude differences that could be used to assign women to jobs of varying difficulty. Proper placement on specific jobs would have to depend at first upon a consensus of empirical judgments until data were available to

determine tests standards. In any case, test scores are not used as absolutes but as additional evidence from which interviewers can decide upon the best possible placement of the applicant.

The first purpose of the testing program is to select those applicants who have a sufficient capacity to learn, which warrants giving them the training for specialization. A short verbal test of learning ability (standardized for adult industrial applicants) is used. A non-verbal test does not serve well enough to select personnel capable of comprehending assembly operation sheets, reading detailed blueprints, learning the essential shop mathematics, reading verniers and the like.

A shortage of machine operators prescribed the next two tests which, in combination, have materially improved selection of candidates for machine tool operation. One is a test of comprehension of mechanical principles (adapted for women). The other is a test of hand-tool dexterity which uses three pairs of small tools to dismount and reassemble three sets of four bolts and washers. They are PCI 30-W and PCI 51, respectively, in the Psychological Corporation Industrial series.

The fourth test diagnoses the applicant's mastery of fifteen fundamental skills in arithmetic. The applicant who lacks many of these skills cannot learn the essential shop mathematics in the time available. This is particularly true of the applicant who cannot do short or long division with whole numbers, multiply or divide a fraction by two, change a fraction to a decimal and point off the decimal in multiplication and division. The trainee is taught only the skills that she has not previously mastered.

The applicant who shows by her scores that she has little promise of even minimum success on the more difficult jobs is given the Purdue pegboard tests of manual and finger dexterity to determine her aptitude for routine assembly work.

The sixth test is not strictly an aptitude test, but it is vital to aptitude testing and to the selection and placement of personnel. Workers doing work to tolerances of a thousandth or a ten-thousandth of an inch must possess suitable near-point or work-point vision. This became evident when twenty percent of the applicants selected in six weeks to learn a special calibration job had to be transferred to less exacting work. Investigation showed each had defective near-point vision. Currently Sperry is adapting the Keystone Visual Safety Test.

The first advantage secured by this test saves time and money; no longer are new employees assigned to training for jobs they cannot learn because of inadequate vision. These vision screening tests also make it possible to avoid assigning an inexperienced applicant to learn machine tool operations when she lacks suitable depth or space perception. Such applicants can safely be taught routine assembly work but not machine tool operation, for without an adequate degree of depth perception they are prone to accidents and cannot machine consistently to close tolerances.

The tests are given to a group of applicants at 7.30 each morning except Sunday. The applicants are seated in a large testing room, and the standard instructions for the tests are read to the group over a public address system. When the tests are completed the applicants are given an opportunity to fill out a statement of qualifications, which is an application in brief. The same morning the applicant has a brief interview with an employment interviewer. After the applicant's work history has been carefully checked and the tests have been scored, the applicant is called back for a final detailed interview.

A single test for hiring all hourly rate employees is being used at *Thompson Aircraft Products Company*, Cleveland, Ohio. The test is the Wage-earner test developed by Joseph C. Kopas of Fenn College, Cleveland. As described by W. R. Ryan, Jr., assistant personnel manager, the test consists of seven parts:

(1) *Mental Alertness*.—This is a series of diagrams of parts of a mechanical nature, such as pulleys and gears. The applicant has to indicate the direction of rotation. This checks ability to think in mechanical terms and to create mental images of mechanical operations.

(2) *Math and Science Background*.—This test consists of a number of elementary problems in addition, multiplication, decimals and fractions. Simple science questions are included. Answers are either right or wrong.

(3) *Personal Characteristics*.—Questions ask how the people with whom the applicant has daily contact have impressed him. The answers tend to show how well the applicant will get along with his fellow-workers, and whether he is an introvert or an egoist.

(4) *Interest in Routine Work*.—The applicant is given the choice of one of two activities of more or less direct opposites. His choices tell whether he likes routine work and is adaptable to specialization, or prefers variety.

(5) *Emotional Stability*.—Half of this test is made up of questions about the applicant's emotions and moods, to which he is to answer yes or no. The other half has statements of a debatable nature to which the applicant answers in agreement, uncertainty, or disagreement.

(6) *Ambition and Drive*.—Three free-time activities are listed. The applicant is asked to choose the one in which he spends most of his leisure moments. Selections tell to what extent he is interested in self-improvement and advancement.

(7) *Mechanical Co-ordination*.—Two screws and four bolts are fastened to a board with nuts. The applicant is timed while he loosens the nuts with wrenches, reverses the bolts with his fingers, and then tightens the nuts again with wrenches. On the screws he uses a screwdriver and wrench to loosen, but only screwdriver and fingers to tighten. The time it takes to do this tells just how well he can make his hands work together on mechanical objects and with tools.

These tests have been found to be fairly indicative. The results have been checked against the progress of new employees both in the learner training school and on production jobs. Successful shop workers are almost always in the higher test grade.

Traditional at *Kimberley-Clark Corporation*, Nee-nah, Wisconsin, is the policy of promoting from within. People are hired not so much for "a job" as for "the Corporation".

This policy has influenced the testing program in two ways, say C. E. Jurgenson and J. C. Simonich of the industrial relations department. First, it has been advisable to test aptitudes rather than an already developed skill, because training is particularly important when promoting from within. Second, tests are used more for employee counselling and placement than for acceptance or rejection of applicants.

With emphasis on the testing of employees rather than applicants, it becomes increasingly important that employee attitudes towards the testing program be highly favourable. This result has been obtained by using tests that appear to be as practical as they actually are, and by using test results in such a way that employees realize they gain rather than lose when tested.

Practical appearance has been obtained by constructing or adapting tests to fit the specific need, using terminology and other factors that relate directly to the paper industry. For example, from an arithmetical point of view, it makes no difference whether a man adds cows or rolls of paper. From the Kimberly-Clark employee's point of view, however, the first is "theoretical and impractical", whereas the second is highly practical.

When the program was started four years ago, procedure included a discussion of test results with each

person. This procedure has since been followed and has done much to obtain employee support. Each employee is told what his strong and weak points are and how he can overcome his weaknesses. Many of the tests are specifically designed to facilitate such discussions.

Insofar as possible, applicants are not told that their test scores are too low for placement on the type of job in which they are interested. Emphasis is placed on the relativity of success in various jobs, and on the importance of getting into an occupational field in which one is most apt to be successful and happy. Test administrators point out that all persons have assets and liabilities and that it is frequently better to strengthen existing assets than to attempt to overcome liabilities. The applicant is thus encouraged to decide for himself the type of work he should enter.

Discussion of employee test results has an excellent effect on employee morale. Instead of thinking that the personnel department is trying to keep them out of desirable jobs because of some prejudice, employees believe management is interested in them as individuals and that they have been aided in making a wise decision which will be important for their future success.

Test administrators are trained in the viewpoint that test results, though important, are nevertheless only one factor to be considered in hiring, placement and upgrading. Tests are therefore used to supplement rather than to replace other personnel techniques.

Because trained workers are so scarce, and the demand is so great, employees at the *Ford Motor Company* are hired first, then tested for aptitude for specific jobs.

In testing for jobs as clerks at the Rouge and Willow Run plants, the employee fills out an information card, giving details of identification, school education and practical experience. Tests given include mental alertness, personality, typing, spelling, copying, simple arithmetic and a checking test.

Tests also are given in upgrading an employee from one job to another. Truckers who wish to become clerks are given reading tests, counting tests and examinations in tallying, simple addition, subtraction, copying, checking, mental alertness and simple filing.

Men and women hired as riveters are given tests for hand and finger dexterity. These include tests in which they are timed as they place rivets in holes on a rivet board, and a test in which they determine the size of rivets by feeling rather than by sight.

These tests were started June 15, 1942, and since that time approximately 10,000 workers have passed them. Foremen agree that the workers selected in this way are superior to those placed on the job without such examinations. Similar testing is done at the Ford Highland Park plant, where the California capacity test, California personality test, peg-board tests, and spatial test (to determine the worker's visualization) are given.

All applicants who apply for shop work at *Caterpillar Tractor Company*, Peoria, Illinois, are invited to

take two tests—Wonderlic's Personnel Test and Bennett's Test of Mechanical Comprehension. These tests are not given to eliminate anyone, or to keep anyone out of employment. They are used merely to do a better job in placing the applicant where he will be a satisfied, valuable employee doing the type of work he likes and is qualified to do best.

Test results are one more tool to assist the personnel division in doing a better job in placing the applicant. When the final selection for employment is made, the interviewer has before him the detailed application, the results of a final and thorough interview, references from former employers, and the test results. Many times there will be also a confidential investigation if the applicant is to be considered for a key position. All these factors are considered—no one factor decides where the individual should be placed.

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TRANSPORTATION

A Remedy for the Following Basic Causes

Lack of Recreational Opportunity
Night Shifts
Poor Transportation
Shopping Problems

Inefficient, uncertain or crowded transportation facilities adversely affect the worker in various ways. By causing undue fatigue and irritation they reduce the worker's productivity, increase absenteeism, lateness and "beating the whistle". Furthermore, the worker may forego his breakfast if the time taken to reach the plant is abnormally long.

Analysis of Problem.—In plants where transportation difficulties are found to be a material contributor to manpower loss, management's first step should be to ascertain whether it applies only to workers living in certain districts or to all employees and whether it applies only to particular methods of transportation or to all facilities. Most of this information can be gathered from "The Employee Opinion Questionnaire".

Once the extent and nature of the problem is ascertained, management will be in a position to determine where improvements are most desirable and what steps are required.

Consider Re-arranging Hours.—If the transportation problem is general throughout the plant, the best solution probably lies in re-arranging working hours to avoid employees using public transportation at peak-load hours. Co-operation between plants situated in the same locality can result in a system of staggered hours whereby no two plants start or finish work at the same time, thereby reducing the crowds to be carried at one time by public transportation facilities.

In large plants, it should be possible to stagger the starting and finishing times of various departments or shops to avoid having too great a percentage of the establishment's workers requiring transportation at the same time.

Co-operation with Transportation Companies.—Transportation companies can render valuable assistance to many establishments who face difficult transportation problems.

An understanding of a plant's problem will permit the transportation company to make desirable changes in its schedule.

It is suggested that small neighbourhood companies make joint representations on their common problems to the transportation authorities.

Use of Employees' Cars.—War conditions have encouraged workers to adopt the "share the ride" principle when using their cars for transportation to and from the plant. Management can do much, however, to encourage the more extensive use of car pooling by determining what areas are now covered by employees' cars, how many passengers are carried per car, how many cars can carry more passengers, by keeping a regular posting of car pool arrangements, by replacing a vacancy in a car caused by an absentee or by an ex-

employee, and, if necessary, by forming a special employees' committee for the purpose of exploiting the use of car-pooling methods to the full.

Value of Labour-Management Round Table.—

In all problems of transportation, the Labour-Management Round Table will be found to be most valuable in developing practical arrangements for alleviating the transportation problem. The employees know what difficulties they are facing and management can assist by offering practical suggestions once it knows the fundamental details of the problem. Co-operation between the two, therefore, is not only desirable but essential to the most practical and efficient methods of solving the transportation problem of industry.

CASE HISTORIES

Quoted from "Printers Ink", November 5, 1943.

The necessity for intensified Share-the-Ride campaigns this winter is foreseen by many industrial firms.

A Share-the-Ride promotion, initiated by the All Out Production for Victory Committee of *General Electric Company's* Bridgeport, Conn., works, with H. J. Benzie, production manager, in charge, helped solve the difficult problem of adequate transportation facilities for workers far removed from the plants.

Core of the plan, of course, was the establishment of a driving club headquarters with the posting of regular weekly listings of car drivers who were able to give fellow workers much-needed rides.

Plant surveys were undertaken. They showed that out of a total employment of 12,000 at G-E's Bridgeport works, there were 2,980 employees' cars registered. This figure it was estimated would expand to 5,000 by the end of the next registration period, exclusively of privately parked or street-parked employees' cars.

Analysis of car data showed that employees' cars carried only 2.8 riders per car. It was determined to promote this figure to 3.8 from June 1 to August 1, with a continuing objective of holding and increasing any achieved gain.

A series of tailor-made, jumbo-size posters with the theme, "Victory Rides on the Gas You Save", was prepared for plant-wide coverage with changes scheduled every week or ten days. Regular weekly editorial cartoons and articles designed to tie-in with the posters and to provide a more direct approach to the individual were placed in the "G-E Works News". Cards, folders, insignia, etc., also promoted the drive.

Quoted from "Factory Management and Maintenance", August, 1943.

The importance of the direction of an employee's residence rather than the zone, is stressed by *Gould & Eberhardt*, Newark, in the formation of ride-sharing groups. The result, according to Granger Davenport, chairman of the company's transportation committee, is a pronounced decrease in paperwork.

"The disadvantage of the rectangular zones is that, after an employee is so classified, his ride-sharing possibilities are likely to be restricted to those in his zone," Davenport points out. "Making contact with riders or car owners in his zone becomes difficult and requires reference to maps and consultation with members of the transportation committee. On the other hand, the simplicity of classifying primarily by direction and secondarily by distance minimizes employee effort in locating and obtaining rides and other car drivers."

At Gould & Eberhardt the employee is first classified by shift, next by compass direction of his residence from the plant, and then by approximate straight-line distance (to the nearest mile) from his home to the plant. The committee uses large-scale maps marked off in radial circles a mile apart to a distance of 10 miles from the plant. Code classification of the employee comprises a number representing the shift, then a hyphen, then the direction in which he lives from the plant, then another number representing the distance in miles. These code classifications are listed on the bulletin board under his shift and under the proper column.

"Suppose, for example, a man finds his name under the 77 shift with the classification E6", Davenport says. "All his neighbours living in a general easterly direction and approximately 6 miles from the plant are known to him at once. The clock and department numbers being listed also on the bulletin board along with the names makes it a simple matter for an employee to form his own car-sharing group".

An additional advantage of the plan is that the sizes of the zones increase with the distance from the plant. Thus two employees 20 miles from the plant may double up even though they each may have to go five miles out of his way to pick up the other. In the regular rectangular zone system, such an opportunity might be overlooked.

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APPENDIX A

ANALYSIS OF MANPOWER LOSS IN CANADA IN 1943

The evidences of manpower loss can be broadly classified under the following headings:

- Low worker productivity;
- Abnormally high labour turnover;
- Preventable absenteeism;
- Strikes and lockouts.

An analysis of the estimated avoidable loss in Canada in 1943 due to each of the above evidences is given below.

Low Worker Productivity.—Owing to the complete absence of national statistics this factor is not measurable, but it is without question the most costly of the four evidences. Many influences contribute to low worker productivity:

Undesirable working conditions within the plant and a variety of causes outside the plant are prime factors in low worker productivity.

Worker absences and the low productivity of outgoing and incoming workers reduce the output of other workers in their own departments and other parts of the plant. In some cases, establishments drawing supplies from a plant with a high absenteeism and labour turnover rate are also adversely affected.

Social security legislation, by lessening the fear of the consequences of unemployment, leads some workers to become indifferent to their work.

Under conditions of full employment, the following influences further reduce worker productivity:

The ease of re-employment causes some workers to be indifferent to their work and to work below their real capacity.

The necessity of using sub-standard workers. Since employment in 1943 was 132 per cent of that in 1939, employers were obviously utilizing sub-standard workers, i.e., women who do not normally work in industry, 'teen age children, old people, those in low physical or mental categories, and temporary or part-time help.

Abnormally High Labour Turnover.—During the twelve months ending June, 1944, 1,748,000 industrial workers changed jobs out of a total industrial employment of 2,938,000. This is an annual rate of labour turnover of 59.5 per cent. Since each worker lost a minimum of one day seeking a new job, this factor alone represented a loss of 1,748,000 man-days. However, the loss due to a worker's low productivity during the seven day period after he gave notice of separation and during his training period each time he entered new employment was more important. This would not average less than the equivalent of 9 days of full productivity each time a worker changed jobs, and the national loss due to this factor can be estimated as at least 15,700,000 man-days.

In total, the above estimates indicate that labour turnover cost Canadian industry during the twelve months preceding June, 1944, at least 17,500,000 man-days. This estimate is only for direct time lost and does not include the indirect loss resulting from the slowing down of others dependent upon "green" help, or from unrest caused by workers about to leave.

Records of pre-war conditions indicate that 50 per cent of this labour turnover is abnormal. Therefore, this factor caused an unnecessary direct loss of over 8,700,000 man-days, which is equivalent to a force of 32,800 men working full time for a year.

Preventable Absenteeism.—On the day that the 1941 census was taken 2.1 per cent of the men and 1.8 per cent of the women employed in industry were away from work. Without allowing for any increase in absenteeism since 1941, these percentages applied to 1944 employment figures indicate a loss through absenteeism of 15,700,000 man-days annually.

Surveys taken in 1943-44 suggest that about half of total absences are due to illness. However, in a number of instances, management has reduced materially the loss from these so-called "unavoidable" absences. Assuming that most "unavoidable" absences could be reduced to some extent and that "preventable" absences could be cut down very greatly, a reduction of 30 per cent in total absences could be achieved in most establishments. This reduction would mean a saving of at least 4,700,000 man-days annually—the equivalent of 17,700 men working full time for a year.

Strikes and Lockouts.—The belief that strikes and lockouts are the chief factors in manpower loss is prevalent in the public mind and in the press. However, the 442 strikes and lockouts in this country in 1943 resulted in a loss of 1,040,000 man-days—about 8 per cent of the loss estimated to result from preventable absenteeism and abnormal labour turnover.

Summary.—The following table summarizes the above estimates.

<i>Cause</i>	<i>Man-days Lost</i>	<i>Equivalent Full-time Working Force</i>
Low worker productivity.....	Unmeasurable	Unknown
Abnormally high labour turnover.	8,700,000	32,800
Preventable absenteeism.....	4,700,000	17,700
Strikes and lockouts.....	1,040,000	3,920

No accurate estimate can be given of the loss due to low productivity, but it is believed that it exceeds the sum of the other three factors. This assumption suggests that the total of avoidable manpower loss probably exceeded 30 million man-days or more than 100,000 man-years during the year preceding June, 1944.

APPENDIX B

CHART SHOWING THE LACK OF DEFINITE RELATIONSHIP BETWEEN THE RATE OF LABOUR TURNOVER AND AVERAGE WEEKLY EARNINGS

(In 261 establishments: 173 war, 88 essential civilian)

On Chart C each dot with the accompanying code letters represents one establishment. The dots are plotted with reference to two factors: average weekly earnings in the establishment, and rate of labour turnover (separations as a per cent of average employment). Weekly earnings in the establishments surveyed vary from \$12 to \$50 as indicated on the left hand side of the Chart. The rate of labour turnover runs from 25 per cent to 150 per cent as shown from left to right along the bottom of the Chart. The code letters accompanying the dot identify the establishment as to:

Type of industry;

Whether primarily engaged in war or civilian work;

Municipality or area in which it is located.

Thus AB indicates that the establishment falls under industry A and is located in municipality B. The rectangular boxes on the left hand side and bottom of the Chart show the number of establishments primarily engaged in war production and civilian production falling within the lines embraced by the brackets extending from side to side and bottom to top respectively.

Considering the Chart as a whole, it will be seen that there is no obvious relation between wages and

labour turnover. In isolated cases of very high and very low wages there appears to be some relation between wages and labour turnover; but, even here, the relation is obscured by numerous contrary examples. Looking either up and down the Chart or from side to side along the Chart keeping the eyes within an area bounded by two vertical or two horizontal lines, it is apparent that high and low labour turnover can occur at approximately the same wage level, irrespective of the level of that wage. Therefore, one can conclude that, as a rule: High wages have not been the cure for high labour turnover; One must look to factors other than increased wages for the solution to the problem of high labour turnover.

To avoid any misunderstanding it should be stated that the establishments plotted on the Chart are not intended to represent a balanced sample of Canadian Industry, but they do represent 173 major war industries and 88 important essential civilian establishments located in large and small municipalities from the Atlantic to the Pacific. Although the sample is not as diversified as might be desired, the items are not confined to any one locality or industry and, therefore, may be considered significant and safely utilized in drawing the above limited conclusions.

KEY TO CODE—LABOUR TURNOVER/EARNINGS CHART

First Letter of Code Indicates Industrial Classification of Establishment, as follows:

A to T—War Industry—

A—Aircraft

B—Shipbuilding

C—Basic Steel and Metals

D—Structural Materials and Supplies

E—Automotive

F to T—Other direct war (ordnance, small arms, ammunition, instruments, etc.)

U to Y—Essential Civilian Industry—

U—Corrugated Cartons

V—Petroleum

W—Work Clothing

X—Abattoirs

Y—Primary Cotton Mills

Second Letter of Code Indicates Geographical Location, as follows:

A—Nova Scotia

B—New Brunswick

C, E—Other Quebec

D—Montreal

F, G—Eastern Ontario

H—Toronto

I—Hamilton

J—Niagara Peninsula

K, L, M, O—Other Southern Ontario

P, Q—Northern Ontario

R—Manitoba

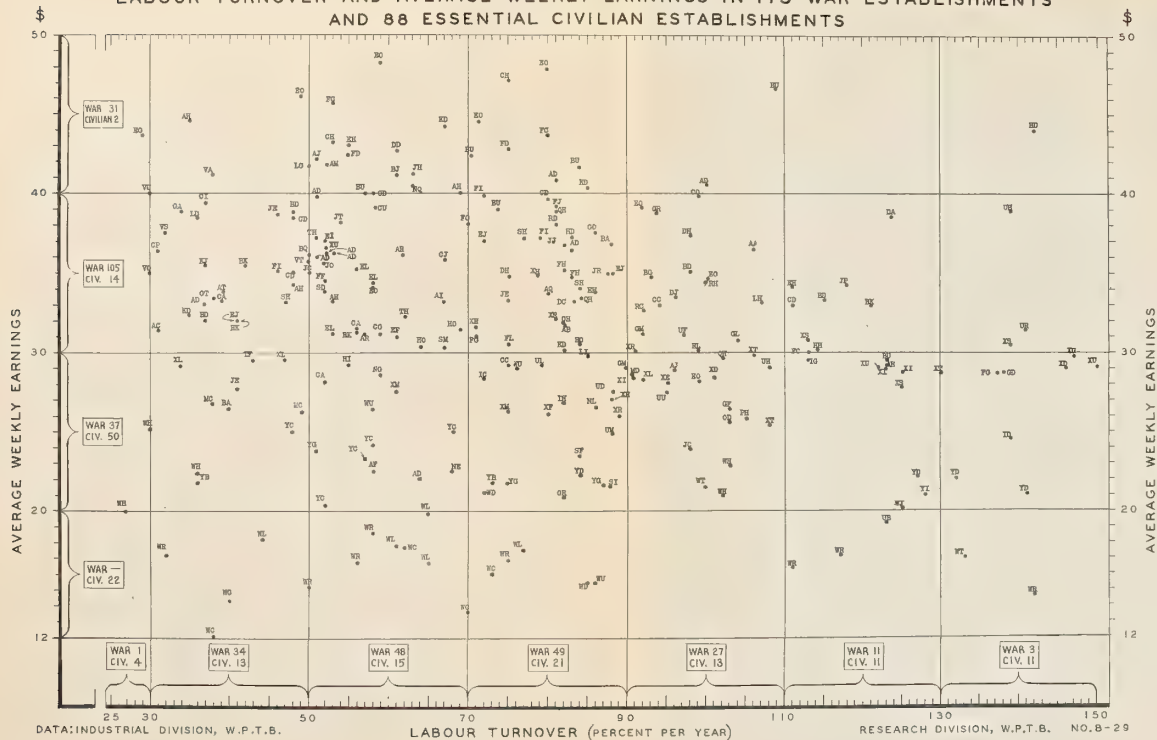
S—Saskatchewan

T—Alberta

U—British Columbia

LABOUR TURNOVER/EARNINGS CHART

LABOUR TURNOVER AND AVERAGE WEEKLY EARNINGS IN 173 WAR ESTABLISHMENTS
AND 88 ESSENTIAL CIVILIAN ESTABLISHMENTS



DATA: INDUSTRIAL DIVISION, W.P.T.B.

LABOUR TURNOVER (PERCENT PER YEAR)

RESEARCH DIVISION, W.P.T.B. NO. B-29

12 MONTHS ENDING SEPTEMBER 30, 1943

APPENDIX C

A METHOD OF ASSESSING THE DOLLAR COST OF MANPOWER LOSS IN AN INDIVIDUAL PLANT

The objects of an analysis of the cost of manpower loss are to determine:

The total preventable dollar cost to management of the four evidences of manpower loss (i.e., absenteeism, labour turnover, low worker productivity, strikes and lockouts). This figure will form the basis for a decision as to the size of the expenditure justified for a program of remedial action.

The comparative dollar cost of each of the four evidences of manpower loss. With this knowledge, remedial attention can be concentrated on correcting those faults which are costing the plant the most money.

Establishment of a Yardstick to Measure the Cost of Manpower Loss.—The first step is to set up a yardstick designed to measure *the dollar value to management of the average daily output per worker*. This yardstick is hereafter referred to as the "Worker Value Unit" or the "W.V.U." When a worker's output is either lost (as when he is absent or his job is unfilled) or when it is only partially realized (as when his efficiency is below standard) there is a direct dollar loss to management. This loss can be measured in terms of the value which his work would have had to management had it been carried out, or, in other words, in terms of the W.V.U.

How to Determine the W.V.U.—From the viewpoint of management the function of a worker is to produce goods and services to be sold at a price sufficient to cover the cost to make and sell those goods and services and at the same time leave a margin of profit. The cost to make and sell falls into two categories:

Direct Cost.—This is made up of direct labour cost and direct material cost and varies with the volume of output achieved.

Indirect Cost.—This comprises all costs other than direct material and direct labour cost and is made up of manufacturing or processing expense, selling expense and administrative expense. Indirect cost remains constant regardless of the level of output achieved.

When the worker does not produce, direct costs are not incurred but indirect costs continue and are not met, and there is no contribution to profit. Therefore, the value to management of the average daily output per worker (the W.V.U.) is the contribution which that worker's output makes to meeting indirect costs and to creating profit. The W.V.U. can be determined by dividing *indirect cost plus profit for any given period by the number of man-days worked in that period*.

How to Determine "Indirect Cost Plus Profit".

—Since selling price is made up of direct cost, indirect cost and profit, the easiest way to determine the item "indirect cost plus profit" is to deduct the total direct cost from the total selling price of goods. Care should be taken to observe the following definitions.

Period Used.—The most satisfactory period on which to base calculations is the most recent fiscal year of the establishment. Calculations so based will be fairly up-to-date and necessary statistics will be available from annual statements.

Total Selling Price of Goods and Services Produced.—This figure should simply be net sales, adjusted for changes in inventory of finished goods.

Total Direct Cost.—This figure is made up of two items: direct material cost; and direct labour cost.

Direct material cost is the total cost of materials used during the period but excludes the cost of indirect materials usually lumped in overhead expense (e.g., lubricants used on machinery, electric light globes, fuel, oil, coal, etc.).

Direct labour cost is the cost of labour which is applied directly to all products manufactured or services rendered during the period. This does not include the cost of indirect labour, which comprises all labour of supervision, maintenance, recording and assistance (e.g., foremen, cleaners, truckers, cost clerks, receiving clerks, store keepers, maintenance men and the like).

Number of Man-Days Worked.—In strict accuracy this figure should represent the number of man-days actually worked by the labour force classified as direct labour. If this figure is not available, multiply the number of employees classified as direct labour (average of 12 month-end figures) by the number of working days in your plant during the year. By using this potential figure, the W.V.U. will be lower than if the actual figures were used, so that estimates of the cost of manpower loss derived from it will be on the conservative side.

NOTE.—For the purposes of computing the dollar cost of manpower loss the W.V.U. is usually accurate to within 5 per cent. It is therefore sufficient if all calculations are within this margin of error.

The following calculations for a hypothetical establishment, Plant X, will serve as a guide in determining the W.V.U. for your plant. In this example it is assumed that work in process is approximately the same at the beginning and end of the year and therefore need not be taken into account.

Method of Calculating the W.V.U.

See Definition		Plant "X"	Your Plant	Item Number
P. 89 <i>Total selling price of goods and services produced</i>				
Total selling price of goods (net sales).....	\$83,121		....
Add opening inventory of finished goods.....	\$3,680			
Total.....	\$86,801			
Less closing inventory of finished goods.....	\$3,140			
Selling price of goods produced during year.....	\$83,661		....	(1)
P. 89 <i>Direct material cost</i>				
Opening inventory of raw materials.....	\$6,214			
Add purchases.....	\$10,602			
Total.....	\$16,816			
Less closing inventory of raw materials.....	\$4,847			
Remainder.....	\$11,969			
Less indirect material consumed (if 5 per cent or over).....	\$3,325			
Direct material cost...	\$8,644		....	(2)
P. 89 <i>Direct labour cost</i>				
Total payrolls.....	\$31,573			
Less indirect labour.....	\$5,652			
Direct labour cost.....	\$25,921			(3)
Total direct costs (item 2 plus item 3).....	\$34,565		....	(4)
Indirect cost plus profit (item 1 less item 4). (selling price of goods produced less direct costs)	\$49,096		....	(5)
P. 89 <i>Number of man-days worked</i>				
Number of wage earners.....	40		....	(6)
P. 89 <i>Number of working days.</i>	267		....	(7)
Number of man-days worked (item 6 x item 7).....	10,680		....	(8)
W.V.U. (value to management of the average daily output per worker). Item 5 divided by Item 8	\$4.60		....	(9)

Accuracy of the W.V.U.—There are three factors which qualify the accuracy of the W.V.U. as determined by the above method:

Calculations are based on a period in which excessive manpower loss is presumed to exist;

Differences in the incidence of manpower loss among workers of different productivity are not taken into account;

The interdependence of individual workers engaged in the same productive process and of groups of workers engaged in different processes is disregarded.

The figure arrived at for the W.V.U. by this method is undoubtedly low since the average worker productivity is based on total production during a period when manpower loss was probably abnormally high. While it is not practicable to correct the W.V.U. itself for this error, adjustment of the total figures which will be arrived at for the cost of manpower loss can be made after such loss has been computed. (For detail, see p. 93)

The use of "average worker productivity" is not invalidated by the fact that the productivity of workers varies, since the purpose of the average is to take such a variation into account. The possibility of error exists to the extent that the various symptoms of manpower loss are not equally prevalent among all groups of work-

ers regardless of their productivity. It is probable that workers whose productivity is low will be responsible for the majority of manpower loss. This will tend to exaggerate the dollar cost of manpower loss as computed by the use of the W.V.U. This factor is compensated for by the third source of error in calculating the W.V.U.

The W.V.U. as computed by the above method does not take into account the interdependence of individual workers and of groups of workers within the plant. The value of any individual worker is only realized when he functions as a part of a whole productive process. If for any reason his place in that process is not filled, the output of all workers in the same process and possibly that of other workers in the plant will be lowered. It is impossible to make any estimate of the significance of this factor and it has therefore been disregarded in the calculations. It should be noted, however, that the error arising from this source will cause the estimates of the dollar cost of manpower loss to be on the conservative side, which will probably more than compensate for the over-estimate arising from the second source of error as discussed above.

Application of the W.V.U. to the Four Evidences of Manpower Loss.—Having determined the W.V.U. for the last fiscal year of operation by the method outlined above, a yardstick has now been established with which to measure the dollar cost during that period of the four chief evidences of manpower loss. The following paragraphs show how to use this yardstick.

The Cost of Absenteeism.—When a worker is not at his job, for whatever cause, the value to management of his normal output is completely lost. In other words, the cost to management of one worker being absent for one day is one W.V.U. Therefore, the total cost of absenteeism in a plant is the total number of days in which workers were absent from their jobs multiplied by the W.V.U. When absenteeism is measured in fractions of days, the absences should be added up and recorded in terms of "days absent." Those firms which keep records of the number of days on which employees are absent will have the necessary data for the above calculation readily available. If records are not kept a representative figure may be obtained by a sampling of weekly periods during the year. For each calendar quarter a representative week should be selected. The paycards of all employees in each of these four weekly periods will show how many days were lost due to absenteeism during these periods. An estimate can then be made of the total annual loss. Absences which result from employees being on strike should not be included under this heading.

NOTE.—For the purposes of the above calculation, the definition of an "absence" will of necessity be that which was used in making up the paycards. In setting up future records of absenteeism, however, some care should be taken in making an exact and accurate definition of the term. This question is discussed in the Section of this Handbook dealing with "Absentee Interviews."

The following calculation for the hypothetical Plant "X" will serve as a guide in determining the cost of absenteeism in your plant.

Calculation of the Cost of Absenteeism

	Plant "X"	Your Plant	Item Number
<i>Representative week in first quarter—</i>			
Total number of employees with paycards	42	....	(1)
Total number of absences as shown on paycards (equivalent in full days)	8	....	(2)
<i>Representative week in second quarter—</i>			
Total number of employees with paycards	46	....	(3)
Total number of absences as shown on paycards (equivalent in full days)	12	....	(4)
<i>Representative week in third quarter—</i>			
Total number of employees with paycards	40	....	(5)
Total number of absences as shown on paycards (equivalent in full days)	13	....	(6)
<i>Representative week in fourth quarter—</i>			
Total number of employees with paycards	44	....	(7)
Total number of absences as shown on paycards (equivalent in full days)	11	....	(8)
<i>Summary of four weekly periods—</i>			
Average number of employees with paycards (Items (1) + (3) + (5) + (7) ÷ 4)	43	....	(9)
Average number of absences (equivalent in full days) (Items (2) + (4) + (6) + (8) ÷ 4)....	11	....	(10)
Number of employees on wages (average of 12 month-end figures—see Item (6) of WVU calculations (p. 90)	40	....	(11)
Average number of weekly absences adjusted for average employment level—(Item (10) x Item (11) ÷ (Item 9))	10	....	(12)
Plant "X" 11 x 40			
43			
Estimated total annual absences (Item (12) x 52)	520	....	(13)
TOTAL ANNUAL COST OF ABSENTEEISM (Item (13) x W.V.U.) (See Item (9), p. 90)			
Plant "X" — 520 x \$4.60	\$2,392	....	(14)

Qualifications on the Use of W.V.U. in Estimating Cost of Absenteeism.—Care must be taken that the four weekly periods chosen are representative of average rather than extremely high or low rates of absenteeism for the quarters in which they occur. It may be argued that the loss to management when a worker is absent is not equal to the value to management of the production of the worker when he is on the job. For example, it may be said that in many plants productive operations are overstaffed by a sufficient amount to make allowance for the rate of absenteeism which exists in the plant. In this case, loss to management would only occur if absenteeism did *not* take place and wages had to be paid when men were in the plant but there was not sufficient work to utilize all the staff to full capacity. Such a system of operation, however, is by its very nature uneconomical. There are few industrial operations of a type in which an absent worker can be replaced by a reserve worker or by the "reserve" capacity of other

workers and the level of productivity long maintained. Moreover, under such a system, worker morale and spirit quickly disintegrates, absenteeism tends to mount rapidly, and workers who are on the job tend to produce below their real capacity. This type of loss is dealt with on p. 92 under the heading of "Low Worker Productivity". The net result is that, in addition to wasting productive manpower, the scheme is, over a period of time, more costly to management than absenteeism itself.

The Cost of Labour Turnover.—The cost to management when a worker quits his job and a new worker must be hired to replace him is made up of three distinct elements:

The loss owing to the low productivity of the "leaving" worker during the period between the time when he becomes dissatisfied and decides to leave his job and the time when he actually leaves.—The duration of this period and the extent to which the worker slackens his effort will vary greatly among workers and among jobs. It may also be affected by government regulations requiring a certain "cooling-off" period between the time when notice of separation is given and the worker actually leaves. The loss during this period is very difficult to measure. However, actual plant experience indicates that the equivalent of at least three full days of productivity are lost as a result of low output during this period after the employee decides to leave.

The loss during the period the position remains vacant.—During this period the value to management of the worker's productivity is completely lost in exactly the same manner as if the worker were an absentee.

The loss owing to the low productivity of the new worker during his training period.—The length of the period required for training and the level of productivity achieved over the period as a whole depends on such factors as the nature of the work, the type of worker, the worker's previous industrial experience, the breakdown of the job, and the ability of the teacher. It is impossible to assess the importance of these various factors over the plant as a whole, and no accurate estimates of the loss resulting from them can be made. Moreover, such factors as spoilage, slowing up of production lines, and loss of the teacher's time add to the loss resulting from low productivity of the trainee. Plant experience has indicated that over the entire industrial field the loss of productivity during the training period of a new worker is equivalent to at least 6 full days of productivity of a trained worker. This estimate is undoubtedly conservative but it will serve to measure the cost of manpower loss in a plant.

In summary, the cost to management of labour turnover is made up of three elements, and may be computed as follows:

Cost of low productivity of leaving worker.—Number of workers leaving the employ of the company during the year multiplied by the W.V.U. multiplied by 3 (the average number of full day's production lost by each leaving worker), plus

The cost resulting from positions remaining vacant.—Total number of days that vacancies were not filled during the year multiplied by the W.V.U., plus

Cost of low productivity of new worker during training period.—Number of new workers hired during the

year multiplied by the W.V.U. multiplied by 6 (the average number of full day's production lost during the training period of new workers).

The following methods of procedure will facilitate making the above calculations.

How to determine the number of workers leaving the employ of the company and the number of new workers hired.—Where records are not kept of quits, discharges and replacements, an examination of pay-cards for the entire yearly period will be required. Regardless of the circumstances under which the employee left the company, the separation should be included in the total. Similarly, each new employee should be included regardless of the duration of his stay with the company.

Total number of days that vacancies were not filled.—This figure may be approximated by a simple method. An average of the number of positions that were unfilled at the end of each month during the year can be obtained by subtracting actual month-end employment figures for employees classified as direct labour from the number of such employees which the management would like to have had at the end of each month.

Note.—Under conditions of labour shortage there may be a sizable discrepancy between actual employment and the desired size of staff. However, if labour turnover were reduced substantially, this discrepancy would be eliminated. For this reason and for the purpose of facilitating calculations of the dollar cost of labour turnover this factor is included at this point.

This average can then be used as a representative sampling and multiplied by the number of working days in the year to determine total number of days that vacancies were not filled.

The following calculation for Plant "X" will serve as a guide in determining the cost of labour turnover in your plant.

Calculation of the Cost of Labour Turnover

See Discussion	Plant "X"	Your Plant	Item Number
P. 91 <i>Cost of low productivity of leaving worker—</i>			
Number of workers leaving employ of company during year	28	....	(1)
Average number of full day's production lost by each leaving worker ...	3	....	(2)
P. 90 W.V.U.	\$4.60	....	(3)
Total cost (items 1 x 2 x 3)	\$386	....	(4)
P. 91 <i>Cost resulting from positions remaining vacant—</i>			
Average of 12 month-end employment figures for workers classified as "Direct Labour"	40	....	(5)
Average of desired size of direct labour staff at end of each month ...	45	....	(6)
Number of working days	267	....	(7)
Total number of days positions were vacant (item 6 less item 5 x item 7).....	1,335	....	(8)
Total cost (item 8 x W.V.U.)	\$6,141	....	(9)

See Discussion	Plant "X"	Your Plant	Item Number
P. 91 <i>Cost of low productivity of new worker during training period—</i>			
Number of workers hired during year	24	....	(10)
Average number of full day's production lost during training period of each new worker....	6	....	(11)
Total cost (item 10 x item 11 x W.V.U.).....	\$ 662	....	(12)
TOTAL COST OF LABOUR TURNOVER (item 4 + item 9 + item 12)	\$7,189	....	(13)

Qualifications on Use of W.V.U. in Estimating Cost of Labour Turnover.—Certain objections may be raised to the above method of determining the cost of labour turnover in a plant.

It makes no allowance for different rates of labour turnover of workers of varying productivity. This objection is quite valid since such refinement is impossible by the very nature of the method. If skilled workers have a higher rate of labour turnover than unskilled, the cost to the plant will be greater than that established by the above method. The reverse will be true if unskilled workers turn over more rapidly than skilled. The margin of error due to this factor is believed to be relatively small, but, if it is sizable due to conditions prevailing in a particular plant, an arbitrary adjustment of the cost of labour turnover can be made.

The arbitrary estimate of the number of day's productivity lost by a worker leaving the employ of the company (3 days) and the loss during the training period of the new worker (6 days) may be inaccurate as applied to a specific plant. The margin of error in this case will depend on so many variable factors that no accurate correction for it can be given on an overall basis. With knowledge of the experience of its plant, management can adjust these arbitrary figures to represent fairly the conditions prevailing for that plant.

Much of the loss under the heading "number of days positions remain vacant" is attributable to shortage of labour rather than actual labour turnover. While this objection is superficially valid, it is nevertheless true that when labour turnover is reduced it is possible to increase the size of the working force by hiring new employees. Over a period of time staff can thus be built up to optimum size and loss which is now attributed to labour shortage can be eliminated. Therefore, it is reasonable to treat this loss as part of labour turnover loss.

No account is taken of the indirect loss caused by such factors as the slowing up of production lines when "green" help must be employed, loss of productive time of workers teaching new employees, spoilage caused by inexperienced help, etc. While these factors do not lend themselves to measurement, they nevertheless are very significant and, since they are not taken into account, estimates of the loss caused by labour turnover will be on the conservative side.

The Cost of Low Worker Productivity.—It is not practicable to present a generally applicable method of estimating the cost of low worker productivity since

comparison between a normal period and a subnormal period of worker productivity is complicated by changes in:

- Wages;
- Methods of production;
- Product specification;
- Ratio of output of products relative to total production of plant;
- The rates of absenteeism, labour turnover and strikes.

However, if a plant is experiencing high labour turnover, the co-existence of low worker productivity is certain. The productivity of employees with long experience at their jobs is normally greater than that of so-called fully trained new workers. Also restlessness among workers about to leave engenders restlessness among the whole staff and hence reduces over-all productivity. In addition, during periods of labour shortage, worker productivity is further reduced through the necessity of employing "sub-standard" help. (These losses are over and above those covered on p. 91, under the heading of "The Cost of Labour Turnover".)

Studies in various plants suffering from excessive labour turnover indicate that the cost of low worker productivity amounts to approximately 5 per cent of the W.V.U. multiplied by the man-days worked in the plant during the fiscal period under review. Management can obtain the desired figure most easily by multiplying the total value to management of worker output (indirect cost plus profit—see p. 90, item 5 of W.V.U. calculations) by 5/100 to arrive at the loss due to abnormally low worker productivity.

The Cost of Strikes and Lockouts.—From the viewpoint of dollar cost to management, strikes and lockouts can be treated as mass absenteeism. Direct costs are not incurred during the period of a strike or lockout, but indirect costs continue so that the full value to management of the output of all workers on strike is lost. In addition, there may be further dollar loss to management owing to the effect on machinery of a complete shutting down of operations. Furthermore, during the period preceding the strike, unrest among workers will undoubtedly result in decreased worker productivity. Finally, even after the termination of the strike, it is probable that in many cases production in the whole plant cannot begin immediately but will get under way by stages as various departments come back into operation. The last three factors cannot be measured and the dollar cost to management due to their effects is not included in the following calculation. For this reason, the following estimate of the dollar loss due to strikes and lockouts is low by an indeterminate but substantial amount.

A conservative estimate of the dollar cost of a strike or lockout can be determined by multiplying the W.V.U. by the number of workers whose production was halted by the strike by the number of days' duration of the strike.

The following calculation for Plant "X" will serve as a guide in estimating the dollar cost to your plant if a strike occurred during the period under consideration.

	Plant "X"	Item Number
Duration of the strike.....	5½ days	(1)
Number of workers whose production was halted	42	(2)
W.V.U.	\$4.60	(3)
COST OF STRIKE (Items 1 x 2 x 3)	\$1,063	

Summary of Dollar Cost of Manpower Loss.—By combining the estimates of dollar cost of manpower loss as set forth above it is possible to determine the total cost of manpower loss, and the relative importance of each of the four symptoms of loss. For Plant "X" the losses may be summarized as follows:

Losses due to	Dollar cost of loss	%
Absenteeism (p. 91)	\$2,392	18.3
Labour turnover (p. 92)	\$7,189	54.9
Strikes and lockouts (p. 93)	\$1,063	8.1
Low worker productivity @ 5%..	\$2,450	18.7
Total	\$13,094	100.0

As pointed out in the discussion of the accuracy of the W.V.U. (p. 90) the above loss figures are based on a worker value during a period when worker output presumably was affected by excessive manpower loss. The actual amount of loss should be based, *not* on the production which actually *was* achieved after the loss *had* taken place, but on the output which *would have been* achieved had the loss *not* taken place. For this reason the figures of dollar cost of manpower loss should be adjusted in terms of what the value to management of the workers' output would have been had manpower loss not taken place. This adjustment can be made by multiplying the dollar cost of manpower loss as computed above by the value to management of potential worker output (item 5 of W.V.U. calculations, see p. 90, plus dollar cost of loss) and dividing this figure by the actual value achieved (item 5 of W.V.U. calculations).

In the case of Plant "X" this adjustment would be made as follows:

$$\frac{\text{dollar cost of manpower loss} \times \text{value of potential output}}{\text{value of actual output}} \\ = \frac{\$13,094 \times (\$49,096 \text{ plus } \$13,094)}{\$49,096} = \$16,500$$

This total loss figure can then be pro rated among the four symptoms of manpower loss to give the actual dollar cost of each. In the case of Plant "X" the result would be as follows.

<i>Actual dollar cost of manpower loss by cause</i>		
Absenteeism ($\$2,392 \times \$16,500$)	=	\$3,020
Labour turnover ($\$7,189 \times \$16,500$)	=	\$9,060
Strikes and lockouts ($\$1,063 \times \$16,500$)	=	\$1,340
Low worker productivity ($\$2,450 \times \$16,500$)	=	\$3,080
TOTAL ESTIMATED COST OF MANPOWER LOSS		\$16,500

This total loss figure can then be pro rated among determine the cost of the manpower loss which took place during the past year.

Preventable Portion of Manpower Loss.—The estimates of the dollar cost of the four evidences of manpower loss in an individual plant, as determined above, will closely represent the cost of the losses which are actually taking place. Even the most intensive program of remedial action will not eliminate all of these losses. Only the preventable portion of the losses can be removed and the possible dollar saving to management is limited to the present dollar cost of that preventable portion. A precise knowledge of the basic causes which are responsible for absenteeism, labour turnover, low worker productivity and strikes in an individual plant is necessary to determine the extent to which the manpower loss from these four symptoms is preventable. Before any program of remedial action is undertaken, a careful survey should be made of the basic causes of manpower loss. However, even before undertaking a survey of basic causes, management will want to know the extent of the dollar saving which can be made by eliminating preventable manpower loss. The best guide for management in this regard is the experience of plants which have carried through a program of remedial action. An analysis of the proportion of manpower loss which actually has been eliminated by such programs in various types of plants throughout the industrial field indicates that the following average reductions of loss can be achieved.

Absenteeism	30% preventable
Labour turnover.....	50% preventable
Low worker productivity.....	100% preventable
Strikes	100% preventable

If your plant has taken none of the remedial measures discussed in Section VII of this manual, and if the causes and incidence of manpower loss are of the same nature as those prevailing in other industrial establishments, it can be assumed that the various evidences of loss in your plant can be reduced by the above percentages.

In the case of Plant "X", the following dollar saving to management could be made by eliminating the causes of manpower loss:

Evidence	Dollar Cost of Loss	% Preventable	\$ Saving Possible
Absenteeism	\$ 3,020	30%	\$ 900
Labour turnover	9,060	50	4,500
Strikes	1,340	100	1,340
Low worker productivity...	3,080	100	3,080
	<hr/> \$16,500		<hr/> \$ 9,820

The saving possible in any plant through the development and application of a program of remedial action of the type suggested in this Handbook can be estimated as suggested above. On the basis of this estimate, management can determine whether it is worth while to devote more careful study to the problem of eliminating the loss. Is it worth three or four months of the time of one executive to discover the causes which are basically responsible for the dollar cost which the plant is experiencing from manpower loss? Is it worth instituting a carefully designed program, based on the recommendations of this Handbook as applied to the particular conditions in the plant, to eliminate this cost? These are questions which the manager of a plant must decide.

DETERMINATION OF EMPLOYEE ATTITUDE AND OPINIONS

In order to determine the basic causes of manpower loss in an establishment, it is of vital importance to discover and analyse the reaction of the employee to his environment both inside and outside the establishment. While it will not be consistent with the profitable operation of the company to attempt to remedy all conditions unsatisfactory to the employees, a reasonably full knowledge of employee attitude and opinion will give management a useful background against which to review any remedies which may be contemplated in the effort to improve the utilization of manpower in the company. Working with a good knowledge of the opinion of the employee and, hence, his probable reaction, it is possible for management to institute those changes which will produce maximum improvement in the utilization of manpower with a minimum of expense.

The following employee questionnaire has been drawn up as a rough guide to management in developing a questionnaire to suit its own requirements. Such a questionnaire should be designed to reveal employee opinion on matters which affect working efficiency. It is believed that distribution of a questionnaire to employees and the summarization of the replies, both carried out along the general lines suggested in the following pages, will assist management to diagnose the basic causes of manpower loss.

Introduction of Questionnaire.—To realize the best results from such a poll of employee opinion, the workers must understand and approve of the method of collecting their ideas and management must be sure of their co-operation before distributing the questionnaire. It follows that the introduction of the poll must be most carefully handled.

A wise way to start is to call a preliminary meeting of the foremen as it is then possible for the foremen to answer employee questions that may arise when the plan is announced to all.

A mass meeting of all employees, called on company time, is the best manner in which to introduce the questionnaire to the employees as it permits the presentation of a uniform explanation of the purpose behind the poll as well as uniform replies to employees' questions. However, meetings of departmental groups of employees on company time may be necessary depending on the number of employees, the number of shifts operating, the nature of the establishment's productive processes (continuous or discontinuous), and the facilities available for holding meetings.

Supplementary data including copies of the questionnaire, instructions as to its use, and an explanation of its purpose should be posted on the bulletin boards simultaneously with the meeting.

Whatever form of announcing the poll is adopted, management should give the employees a frank, complete, and thought-provoking explanation of the purpose of the poll, the spirit in which to treat the questionnaire,

and the use to be made of the information revealed by the poll. Every effort should be made to secure the enthusiastic co-operation of the employees (if some or all of the employees are affiliated with a union, the questionnaire should be discussed with union officials before holding the mass meeting of employees). The tenor of the preamble to discussion of the questionnaire at the mass meeting might be somewhat as follows:

"A few weeks ago we received a Handbook from the Dominion Government called a "Fair Day's Output from a Fair Day's Work", which set us thinking. It discusses a number of things which are of vital interest to us all and it brings up a lot of points which concern nearly every one of us in this Company. Some of these points we, as management, ought to have thought of and haven't, and some of them only you, as the men who do the actual work on our products, can tell us about. We have been led by this Handbook to think of a number of things that can be done to make work easier and more pleasant as well as to help us to do our jobs, both yours and mine, better, whatever our job may be. The Handbook suggests that, as a first step toward improvement, you and I sit down together and figure out just how things stand with us now and what might be done through joint action to improve the lot of all those who together make up the company—yes, you, the employees, we, the management, and that other group that make our jobs possible—the owners.

Before going any farther, I had better say that we are not going to discuss wage rates to-day, nor salaries nor dividends. Nor are we going to talk about production problems. These problems can be better dealt with separately and at another time. Not that I think for a moment that you, I, or the shareholders will lose interest in the dollars recovered from the company, or that the company has lost interest in production and costs. Heaven forbid! As a matter of fact, what I am going to talk about can put more in your weekly envelope, can help production and therefore benefits the owners too all without any wage rate change, without any speed-up schemes, and, in fact, with less effort on your part. Now that these points are clear, I will tell you about the Report which the booklet suggests that we make together.

The Report is something that you and I make jointly for our own mutual benefit and which we will subsequently sit down together and study. In it will be the reasons for things that we all know about—things that hurt us all although we may not realize it—such things as labour turnover, absenteeism, the other fellow who holds you back and cuts your earnings or spoils your work, things that make you mad or fed up, stupid things, as well as the answers to many questions that you have wondered about. The Handbook points out how much it costs us all in dollars and cents right out of our pockets, yours and mine. When we got to

thinking about this, we found that last year in this Company alone there were \$..... (determined from absentee report) not paid out to us because we were not at work to earn it! We have also found that it cost the Company \$..... (see p. 93) in lowered production to have you away from work. Similarly, when a fellow quits us it costs him money as well as the Company. So you can see that anything we can do to help everyone to keep on the job as much and as long as possible, and at the same time liking it, is to everyone's advantage.

The Handbook mentions some of the things that we can do to help keep everyone on the job; but points out that before we can overcome whatever is wrong with us we must first find out what the trouble really is. That sounds like common sense, doesn't it? Come to think of it, some of us have lived a good share of our lives in this plant with the result that we have probably gotten used to a lot of things bothering us; yes, me too. I cannot possibly try the particular job that each one of you is doing to find out what is wrong or unpleasant about it. And why should I when you can tell me? No reason at all. So we have decided to ask your help and advice about a lot of things, large and small; important things that may be wrong, wrong with me, wrong with the plant, wrong with you—not merely grouches but real troublesome things.

I could ask you to tell me right now what changes you would like to see around here, but a lot of you do not like to talk in public about what you think and some of you would not tell me at all if it meant my knowing your identity. Anyway, it would not be possible for us all to give sound opinions on the spur of the moment. So, to get around all these difficulties, we have had copies of a questionnaire printed and I am going to ask you all to take one home to fill in. Then we'll have a Report of everyone's opinion. Bring it back without putting your name or number on it—you know, just like a ballot—and drop it into the ballot box which you will find near the time-clock. Everybody is to fill one out so that, while we won't know who said what, we will know that everyone has had his say.

After a week has passed, a committee consisting of your representatives and me will go over the summary of the ideas from the questionnaire and then we will get busy to see if we can't make life more pleasant,

the pay envelope heavier, and the day more productive. Yes, all without speed-up or wage rate changes!

And so we ask you to take some time in answering each question to try to tell us what you really think, so that we shall get a true picture of just how things look to the majority of us here. Remember, don't sign your name or number as all we want to know is **WHAT YOU THINK**, not who you are. Now I am going to go over the questionnaire with you and then try to answer any questions you may want to ask."

The questions appearing on the suggested employee opinion questionnaire are divided into general groups, such as "hours of work", "transportation", "your work and you"; each group being designed to give a full view of one aspect of the employee's life as it affects his productivity. Summarized, the groups present a picture of the employee's attitude to his environment. Of course, it is not possible or necessarily desirable to satisfy the wishes and needs of every employee and, therefore, the full value of the questionnaire lies in the summary which allows management to determine to what the majority will react favourably. Thus, the summary makes it possible to avoid the error of taking the opinion of the vocal minority as the opinion of the majority.

In summarizing the completed questionnaires, the answers to the "yes" and "no" questions should be ticked off on the summarization sheet while questions which require an individual expression of opinion should be arranged in similar groups to the extent possible. A separate summary sheet should be used for each department or shop and for each shift working in each department to arrive at a complete analysis of conditions. The separate sheets should be totalled on a final summary sheet. Study of the poll will be facilitated thereby, as it will be possible to see at a glance what opinions are predominant.

With the summary sheet at hand, management can sit down with employee representatives and discuss the poll, point by point, supplementing the poll wherever necessary with further study. In this manner, management will be able to arrive at what efforts to improve productivity it can make consistent with profit, while at the same time being able to scotch the opinions of a vocal minority wherever their opinions are at variance with those of the majority as revealed by the poll.

EMPLOYEE OPINION QUESTIONNAIRE

Note.—In answering the questions be fair, don't be frivolous. You are being asked to make your Company a better place to work in, so see if you can suggest something *practical* that you believe would be an improvement on existing conditions.

Name of your department or shop is.....

Your sex is male.....female..... Your shift is day.....evening.....night.....

1. HOURS OF WORK

- (a) Do you consider the starting time of your shift (1) just right.... (2) too early.... (3) too late....
- (b) If you are not satisfied, what starting time do you believe would produce better results? Starting time a.m.....p.m.....
- (c) Do you think your hours of work (1) about right..... (2) too long..... (3) too short.....

- (d) If you are not satisfied and assuming that you will be paid at the same wage rates, how many hours would you like to work (1) per day.....(2) per week.....
- (e) Do you think the number of weeks between shift rotations are (1) just right....(2) too short....(3) too long.....
- (f) If you are not satisfied, how long would you like between shifts? Number of weeks.....

2. TRANSPORTATION

If you come to work by street car.....bus.....or train.....

- (a) What area of the city do you come from (name line and stop nearest your home).....
- (b) What is the time usually required to reach plant from home (1) on day shift.....(2) on evening shift.....(3) on night shift.....
- (c) What is the time usually required to reach home from plant (1) on day shift.....(2) on evening shift.....(3) on night shift.....
- (d) Do you usually have regular and frequent service (1) *to home* (2) *to plant*
- | | | |
|-------------------|-------|-------|
| (1) day shift | ..... | ..... |
| (2) evening shift | ..... | ..... |
| (3) night shift | ..... | ..... |
- (e) Do you usually have to stand (1) *to home* (2) *to plant*
- | | | |
|-------------------|-------|-------|
| (1) day shift | ..... | ..... |
| (2) evening shift | ..... | ..... |
| (3) night shift | ..... | ..... |
- (f) If you come to work in another employee's car.....
- (g) What area of the city do you come from (name nearest cross streets).....
- (h) How long does it take you to walk home from where you are (1) picked up.....(2) dropped.....
- (i) How long are you usually kept waiting when you are picked up on the way (1) to plant.....(2) from plant.....
- (j) If you drive your own car and pick up other employees.....
- (k) What area of the city do you come from (name nearest cross streets).....
- (l) How much are you taken out of your way to pick up other employees (1) distance in quarter miles.....(2) length of time required.....
- (m) How long are you usually kept waiting by other employees you pick up on the way (1) to work.....(2) from work.....

3. YOUR WORK AND YOU

- (a) Do you consider your work to be monotonous—No.....Yes.....
- (b) Do your eyes ache—seldom.....fairly often.....frequently.....
- | |
|--|
| (1) Do you think you need glasses—Yes.....No..... |
| (2) Have you had your eyes tested—Yes.....No..... |
| (3) Do you think the lighting is good.....fair.....poor..... |
- (c) Does your head ache—seldom.....fairly often.....frequently.....Do you believe the cause is (check one or more) (1) ventilation.....(2) noise.....(3) heat.....(4) cold.....(5) hunger.....(6) tired.....(7) lighting.....
- (d) Do your arms ache—seldom.....fairly often.....frequently.....
- | |
|---|
| (1) Do you think rearranging your work would help—No.....Yes..... |
| (2) If yes, how would you rearrange your work..... |
- (e) Does your back ache—seldom.....fairly often.....frequently.....
- | |
|---|
| (1) Do you think rearranging your work would help—No.....Yes..... |
| (2) If yes, how would you rearrange your work..... |

- (f) Does your neck ache—seldom.....fairly often.....frequently.....
 (1) Do you think rearranging your work would help—No.....Yes.....
 (2) If yes, how would you rearrange your work.....
- (g) Do your legs ache—seldom.....fairly often.....frequently.....
 (1) Do you think rearranging your work would help—No.....Yes.....
 (2) If yes, how would you rearrange your work.....
- (h) Are your feet sore—seldom.....fairly often.....frequently..... Would any particular change in working conditions help—Yes.....No..... If Yes, what.....
- (i) Are you afraid of an accident with your machine—No.....Yes..... If Yes, what do you think could be done to make your machine safe?.....
- (j) Are you afraid of an accident with your neighbour's machine—No.....Yes..... If Yes, what do you think could be done to make your neighbour's machine safe.....
- (k) Do you think you are given more than your fair share of work—No.....Yes..... If Yes, to what do you attribute this unfair work load.....
- (l) Does your foreman "get on your nerves"—No.....Yes..... If Yes, what things about the foreman irritate you.....
- (m) Do your fellow workers "get on your nerves"—No.....Yes..... If Yes, what things about your fellow workers irritate you.....

4. NUTRITION

- (a) Before leaving your home for the plant do you usually eat (check 3)
 (1) day shiftfull meal.....or snack.....
 (2) evening shift.....full meal.....or snack.....
 (3) night shift.....full meal.....or snack.....
- (b) On returning from the plant to your home do you usually eat (check 3)
 (1) day shiftfull meal.....or snack.....
 (2) evening shift.....full meal.....or snack.....
 (3) night shift.....full meal.....or snack.....
- (c) Do you eat away from home—seldom.....fairly often.....frequently..... When you eat away from home, do you usually eat in—(1) plant cafeteria.....(2) outside restaurant.....
- (d) Do you eat in a lunch room *at beginning of* (check 3)
 (1) day shiftsnack.....full meal.....
 (2) evening shiftsnack.....full meal.....
 (3) night shiftsnack.....full meal.....
- (e) Do you eat in a lunch room *at mid-shift break during* (check 3)
 (1) day shiftsnack.....full meal.....
 (2) evening shiftsnack.....full meal.....
 (3) night shiftsnack.....full meal.....
- (f) Do you eat in a lunch room *at end of* (check 3)
 (1) day shiftsnack.....full meal.....
 (2) evening shiftsnack.....full meal.....
 (3) night shiftsnack.....full meal.....
- (g) What do you think of the lunch room where you usually eat—(1) are the MEALS good.....fair.....poor..... (2) is the PRICE low.....high.....about right..... (3) is the SERVICE good.....fair.....poor..... (4) are the SURROUNDINGS good.....fair.....poor.....
- (h) If POOR, what do you think could be done to improve
 (1) meals
 (2) service
 (3) surroundings
- (i) How long does it take you to get to the lunch room from your working place.....minutes.

- (j) Do you usually bring your own lunch—Yes.....No.....
- (k) Do you usually buy a supplement to your lunch—Yes.....No.....
 (1) If Yes, where do you usually buy the supplement—plant cafeteria.....snack counter.....
 outside restaurant..... (2) If Yes, what do you usually buy (a) to drink.....
 (b) to eat.....
- (l) If you bring your lunch, when do you eat it—(1) at the beginning of (a) day shift.....(b) evening
 shift.....(c) night shift.....(2) at the mid-shift break during (a) day shift.....(b) even-
 ing shift.....(c) night shift.....(3) at the end of (a) day shift.....(b) evening shift.....
 (c) night shift.....
- (m) If you bring your lunch do you eat it (1) in the room provided..... or (2) by your machine.....
- (n) If you do not eat in room provided, why not.....
- (o) Would you use a cafeteria if there were one in your plant—Yes.....No..... If Yes, when would
 you use the cafeteria—
 (1) day shift, at beginning.....at mid-shift break.....at end.
 (2) evening shift, at beginning.....at mid-shift break.....at end.
 (3) night shift, at beginning.....at mid-shift break.....at end.
 If Yes, how often would you use the cafeteria (a) every day.....(b) occasionally.....
- (p) What would you eat *at beginning of*
 (1) day shiftsnack.....full meal.....
 (2) evening shiftsnack.....full meal.....
 (3) night shiftsnack.....full meal.....
- (q) What would you eat *at mid-shift break*
 (1) day shiftsnack.....full meal.....
 (2) evening shiftsnack.....full meal.....
 (3) night shiftsnack.....full meal.....
- (r) What would you eat *at end of*
 (1) day shiftsnack.....full meal.....
 (2) evening shiftsnack.....full meal.....
 (3) night shiftsnack.....full meal.....
- (s) What price would you expect to pay for (1) full meal.....cents (2) snack.....cents.
- (t) Would you like to have in the cafeteria, (1) benches.....(2) table and chairs.....
- (u) Would you like to eat with members of the opposite sex—Yes.....No.....
- (v) Would you like to eat with executives—Yes.....No.....
- (w) Do you usually buy something from the counter during rest pauses—Yes.....No.....
- (x) If Yes, what do you usually buy (a) to drink.....name items (b) to eat.....name items.

5. HEALTH

- (a) Do you think the number of washrooms is sufficient—Yes.....No.....
- (b) Do you think the number of restrooms is sufficient—Yes.....No.....
- (c) Do you think the restrooms and washrooms are clean—Yes.....No.....
- (d) What practical changes, if any, would you like to see made in the washrooms.....
- (e) About how often do you use the showers per week.....
- (f) If showers were provided, about how often would you use them per week.....
- (g) Do you think the locker rooms are adequate for your needs—Yes.....No.....
 (1) If No, what practical changes do you feel could be made at reasonable expense.....
- (h) Do you feel ill (1) infrequently.....(2) fairly often.....(3) frequently.....
- (i) What usually causes you to feel ill (as cold, over-tired, etc.).....
- (j) What do you think contributes to your illness (1) conditions outside plant.....(2) conditions inside
 plant.....(3) your own habits.....(4) exposure to someone outside plant.....
 (5) exposure to someone inside plant.....(6) something your employer could reasonably change—
 No.....Yes.....If Yes, what is the change.....
- (k) Are you absent from work because of your own illness—(1) infrequently.....(2) fairly often....
 (3) frequently.....

6. RECREATION

- (a) What types of recreation do you like most (name in order of importance to you)
1.
 2.
 3.
 4.
- (b) Do you feel that you enjoy your favourite recreation—1. freely.....2. often enough.....3. not often enough.....
- (c) If you do not get the recreation you feel you need, to what do you attribute this lack—(1) conditions outside plant.....(2) conditions inside plant..... If Yes, what recreational facilities do you think could be developed at reasonable expense (1) in the plant.....
.....
(2) near the plant.....
.....
(3) in the community.....
.....
- (d) Would you use recreational facilities (1) in the plant—Yes.....No..... (2) near the plant.....
Yes.....No.....
- (e) What facilities would you use (1) in the plant.....
.....
(2) near the plant.....
.....
- (f) What part of the cost of recreational facilities do you think the company should pay (1) all.....
(2) part.....(3) none.....
- (g) If part or none, how do you think the balance should be raised.....
.....
- (h) If you drink alcoholic beverages, are you absent from work because of hangovers (1) frequently
.....(2) not often.....(3) never.....
- (i) To what do you attribute your over-indulgence (1) conditions outside plant.....(2) conditions
inside plant.....(3) drink to be sociable.....

7. WORRIES AND OUTLOOK

- (a) What conditions bother you (1) outside the plant.....
.....
(2) inside the plant.....
.....
- (b) Do people disturb you—Yes.....No..... If Yes, who (1) your family.....(2) your boss.....
(3) your friends.....(4) your fellow workers.....
- (c) Do you believe your past training is being utilized fully at your present job—Yes.....No.....
- (d) If not, is there a job in the factory which you believe your training fits you for better than the one
you are now doing—Yes.....No.....
- (e) Have you requested a change of job—Yes.....No..... If No, why have you not requested a
change of job.....
If Yes, to whom did you make your request (title only, no names).....
.....
- (f) Why do you think your request was refused.....
.....
- (g) What was the reason given to you for refusing your request.....
- (h) What do you think could be done to overcome the difficulties in your way.....
- (i) Would you like to take further training—Yes.....No.....If Yes, what type of training.....
.....
- (j) For what specific job (if any).....
- (k) Have you investigated whether the type of training you desire is available through (1) municipal
schools—Yes.....No..... (2) private (commercial) schools—Yes.....No..... (3) If Yes, why
have you not used these facilities.....
.....

8. WHY YOU TAKE THAT "DAY OFF"

For which of the following reasons are you absent

	(1) Frequently	(2) Fairly often	(3) Seldom
(a) to pay bills.....
(b) to cash cheques.....
(c) to shop (regular shopping).....
(d) to shop for scarce goods.....
(e) to obtain ration cards, liquor permits.....
(f) business
(g) visit to dentist
(h) visit to doctor.....
(i) to visit hairdresser, barber.....
(j) to take care of children.....
(k) to do housework.....
(l) oversleeping
(m) househunting
(n) births
(o) deaths
(p) funerals
(q) weddings
(r) to be with servicemen on furlough.....
(s) visiting relatives
(t) to go to parties.....
(u) to go to, take part in games.....
(v) to look after sick friends or relatives.....
(w) to help with voluntary war work or welfare work..
(x) because working extra time at night makes me too tired to come in sometimes.....

SAMPLE OF SUMMARIZATION SHEET

1. HOURS OF WORK

(a)	(1)	Total.....		Total.....
	(2)	Total.....		Total.....
	(3)	Total.....		Total.....
(b)	Group (1)	Total.....	Group (3)	Total.....
	Group (2)	Total.....	Group (4)	Total.....
(c)	(1)	Total.....		Total.....
	(2)	Total.....		Total.....
	(3)	Total.....		Total.....
(d)	(1) Group (1)	Total.....	Group (3)	Total.....
	Group (2)	Total.....	Group (4)	Total.....
	(2) Group (1)	Total.....	Group (3)	Total.....
	Group (2)	Total.....	Group (4)	Total.....
(e)	(1)	Total.....		Total.....
	(2)	Total.....		Total.....
	(3)	Total.....		Total.....
(f)	Group (1)	Total.....	Group (3)	Total.....
	Group (2)	Total.....	Group (4)	Total.....

2. TRANSPORTATION

streetcar				Total.....
bus				Total.....
train			..	Total.....
(a)	list on separate sheet			
(b) (1)	Group (1)	Total.....	Group (3)	Total.....
	Group (2)	Total.....	Group (4)	Total.....
(2)	Group (1)	Total.....	Group (3)	Total.....
	Group (2)	Total.....	Group (4)	Total.....
(3)	Group (1)	Total.....	Group (3)	Total.....
	Group (2)	Total.....	Group (4)	Total.....
(c) (1)	Group (1)	Total.....	Group (3)	Total.....
	Group (2)	Total.....	Group (4)	Total.....
(2)	Group (1)	Total.....	Group (3)	Total.....
	Group (2)	Total.....	Group (4)	Total.....
(3)	Group (1)	Total.....	Group (3)	Total.....
	Group (2)	Total.....	Group (4)	Total.....
		1		
(d) (1)				Total.....
(2)				Total.....
(3)				Total.....
		2		
(1)				Total.....
(2)				Total.....
(3)				Total.....
		1		
(e) (1)				Total.....
(2)				Total.....
(3)				Total.....
		2		
(1)				Total.....
(2)				Total.....
(3)				Total.....

APPENDIX E

ABSENTEE INTERVIEWS

The Reason for Absentee Interviews.—Absentee interviews used in conjunction with employee opinion questionnaires and termination interviews assist management in determining the basic causes of manpower loss. Together with Round Table discussions, they enable management to observe and check new causes of manpower loss as they arise.

The Method of Conducting Absentee Interviews.—When the absentee returns to work the foreman should arrange for him to have an interview with the personnel director on company time. The appointment should be made for a time when the absentee can leave his work with a minimum of effect on production. Conversations in private, uninterrupted by visitors or telephone calls and conducted on an informal, sympathetic, open-minded, and man-to-man basis put the employee at his ease and encourage him to talk freely.

To ensure that the real reason for an absence will be discovered, the interviewer must use the proper personal approach and guide the questioning of the absentee in such a manner that evasion of the truth is difficult. He must make sure that the worker understands that he is the intermediary between management and the worker and that he is charged with presenting the worker's viewpoint to management, as well as that of management to the worker. Frequently, the interviewer should avoid direct questioning of the employee in favour of a guided conversation designed to draw out the underlying cause of the absence. A sympathetic approach combined with leading questions will usually elicit a truthful reply.

An employee who has been absent for a reason beyond his control deserves sympathy and possibly assistance. The interviewer must be certain that he has obtained the true cause of the absence before attempting to guide or censure the employee. The wise interviewer will adopt a sympathetic attitude during the initial stages of the questioning period in all cases. However, once he is satisfied he knows the real cause of the absence, he will base his subsequent attitude not only on the absence in question but on the employee's complete history during the period he has been with the company as well as on all personal facts pertaining to the employee which it is possible to obtain.

Determining the Reason for an Employee's Absence.—Successful personnel directors have found that by using an interview built around the points presented below they have been able not only to determine the basic causes of workers' absences, but to correct some of these causes at the time and under circumstances when the workers are most receptive to guidance and discipline.

The Personnel Director should, when the absentee enters his office, overcome his suspicions by

Insuring privacy

Asking how the absentee is getting along with his job

The Personnel Director then

Asks about the absence

Was the absence authorized

What can be done by employee to avoid a recurrence

What can be done by company to help employee avoid a recurrence

Has employee been disciplined recently?

If yes, by whom

What was nature of discipline

Employee believes reason for discipline was

Actual reason was (interviewer advises employee)

What company can do to prevent recurrence

What employee can do to prevent recurrence

At this stage of the interview the employee is requested to state the reason for his absence. The reason advanced will fall into one of the following sections and questioning regarding the reason advanced might proceed in the manner indicated in the applicable section below.

Personal Business Advanced as Reason for Absence

Interviewer attempts to discover the facts behind the reason advanced

Reason given by interviewer for absence

What employee can do to prevent a recurrence

What company can do to prevent a recurrence

What the community can do to prevent a recurrence

After the interviewer feels that he has obtained the true cause of absence, he will base his remarks on his estimation of the absentee's character, possibly along the lines suggested at the conclusion of these interview guides.

Recreation Advanced as Reason for Absence

Type of recreation

To participate in

To be spectator at

Reason given by interviewer for absence

Why did the employee feel that he needed recreation which could not be satisfied out of working hours

Was there an alternative not requiring time off

What employee can do to prevent a recurrence

What employer can do to prevent a recurrence

What the community can do to prevent a recurrence

Illness Advanced as Reason for Absence

Nature of disability
Employee confined to hospital
Employee confined to bed
Employee confined to home
Did employee consult a doctor
Who is employee's doctor
When did employee consult doctor
Doctor's advice to employee
Why was doctor not consulted
What did employee do to cure ailment
Employee believes cause in plant
Employee believes cause outside plant
What employee can do to help cure ailment
What employer can do to help cure ailment
What doctor can do to help cure ailment

Low Morale Advanced as Reason for Absence

Is the cause inside the plant
Is the cause outside the plant
Interviewer attempts to find underlying causes
of low morale
Interviewer believes cause to be
What the employee can do to prevent a recur-
rence

What the company can do to prevent a recur-
rence

What the community can do to prevent a recur-
rence

The Interviewer's Concluding Remarks.—Since experience indicates that persons who respond to an appeal to pride are in the majority, while those who understand force alone are a relatively small minority, two types of concluding remarks are suggested below. The first is designed for an individual who is likely to respond to an appeal to his pride; the second is for an individual who responds only to discipline.

The interviewer, after satisfying himself as to which of the two types of appeal the employee is more apt to respond, might base his concluding remarks along the lines outlined below.

Appeal to the Employee's Pride

Importance of employee's work to company
Importance of employee's work to others
Importance of employee's work to himself

Resort to Discipline

Employee's duty to himself
Employee's duty to company
Employee's duty to fellow employees

APPENDIX F

TERMINATION INTERVIEWS

The Reason for Termination Interviews.—Termination interviews used in conjunction with employee opinion questionnaires and absentee interviews assist management in determining the basic causes of manpower loss. They are particularly valuable in determining the reasons for labour turnover and, together with Round Table discussions, enable management to observe and check new ailments as they arise.

The Purpose of Termination Interviews.—If the employee is being discharged, the termination interview serves three purposes.

The interviewer has an opportunity to review with the employee all the facts of his history with the company and to explain fully why the company feels it must discharge him. A full explanation of the facts reduces the chance of an employee feeling that he has been unfairly treated. This is important in view of the damage that a disgruntled employee can do in fomenting disloyalty among the present members of the working staff as well as in retarding the recruiting of new members.

The interview with the employee may reveal that his case has been misunderstood and that he is being discharged for matters which are beyond his control. In this case, after offering to help the employee with his problems or to make redress to him as the circumstances indicate, it may be that the employee can be retained, although possibly in a different capacity.

The ill-informed and impetuous types of employees may be sufficiently impressed by the justice of the company's attitude as revealed during the interview to request an opportunity for another chance and, if the circumstances warrant granting his request, the employee may prove satisfactory in the future.

If the employee is leaving of his own volition, termination interviews serve two purposes.

Persuading useful employees to reconsider their decision to leave the company. In many cases a useful employee will disclose a legitimate complaint during a termination interview which can be rectified or explained to his satisfaction. Many employees are reticent about complaining to their superiors even when they have a reasonable complaint but once they have decided to leave the company they feel free to talk.

Encouraging the quitting worker to air complaints, even of a superficial nature, will often enable management to discover the basic causes of employee dissatisfaction.

Method of Conducting Termination Interviews.—

The success of the termination interview is largely determined by the freedom with which the employee states his views. Therefore, the place in which the interview is held and the attitude of the interviewer must be such as to put the employee completely at ease. The conversation should be private and should not be interrupted by visitors or telephone calls. The interview should be conducted informally, sympathetically and open-mindedly. The interviewer must make sure that the worker understands that he is the intermediary between management and the worker and that he is charged with presenting the worker's viewpoint to management as well as that of management to the worker. If the employee is leaving of his own volition, there should be no suggestion of coercion or of an attempt to persuade the employee to remain. If the interviewer succeeds in impressing the employee that he is willing to listen open-mindedly, he will usually get the full story behind the employee's dissatisfaction. Since the smallest complaint is important to the man concerned, the interviewer should listen patiently, sincerely and encouragingly to the employee; draw out the full story through discussion; carefully avoiding an argumentative attitude. The interviewer should encourage the employee to repeat his story until all the facts as the employee sees them are clear. If necessary, the interviewer should then consult the other employees concerned and the pertinent records; taking time to get all the facts straight to avoid jumping to conclusions. When the interviewer is certain that he has all the facts, he should present his view of the case to the employee, assess the relative responsibilities of the company and the employee, indicate where he feels the employee to be at fault and what the company is prepared to do in redress or to remove the cause of the complaint. At this point, if the interviewer feels that the employee's attitude is favourable and that his further services would be valuable to the company, he may invite the employee to reconsider his decision to leave. If the employee decides to remain, the interviewer should request him to discuss with his representative on the Round Table any complaint which the foreman has not settled to his satisfaction. This will ensure that future complaints are handled promptly and in fairness to all concerned. However, if the employee persists in leaving, the interviewer should endeavour to have him leave with the best possible feeling toward the company. If the employee is being discharged, the same technique should be used by the interviewer as when the employee is leaving on his own volition, with special emphasis on having him leave with the best possible feeling toward the company.

APPENDIX G

PROCEDURE FOR ORGANIZING AND CONDUCTING A LABOUR-MANAGEMENT ROUND TABLE

The information regarding organization procedure given below is in considerable detail. Although much of it will apply only to large Round Table meetings, the principles are applicable to all. Large meetings should be conducted in a particularly orderly manner and with clearly defined methods of procedure to prevent them from getting out of hand and to expedite business. A formally constituted and conducted Round Table adds to its prestige and to the representatives' interest in its operation.

Introducing the Round Table

Prepare a tentative constitution for the Round Table to acquaint employees with the exact nature of management's plans and to act as a basis for discussion in creating a permanent organization.

Present the plan to the supervisory staff; their co-operation is essential to the success of the plan.

Call a mass meeting of all employees and present the plan to them. If a mass meeting is impractical, departmental meetings should be held. Explain how representatives of labour will be elected. Make every effort to arouse the employees' interest and co-operation.

NOTE.—Do not initiate discussion of the Round Table when a trade union is carrying on an organizational drive in the plant. Workers may regard the Round Table as an attempt to head off unionization.

Organization of the Round Table.—Determine electoral divisions for the plant, usually by departments, and post lists indicating where employees are to vote. This serves to make Round Table representatives responsible to particular groups of workers. Arrange for secret balloting and supervision of the counting of ballots.

Have employees nominate their representatives. Employees are usually required to have been in the company's service for one month to be eligible to vote and for six months to be eligible for election as a representative. Each eligible employee is entitled to nominate a candidate. Post the nomination lists. Hold an election to elect labour members to the Round Table. It is usual to hold elections one week after nominations. The eligibility requirements are the same for electing as for nominating.

NOTE.—In some establishments where a trade union has an agreement, the workers' representatives are elected by the union. Both management and unions have found that this helps to ensure that the Round Table in no way infringes upon the sphere of union interests.

Choose management representatives equal in number to employees' representatives. In addition to the executive in charge of personnel, who always sits at

the Round Table, management may choose any member of the company.

Announce the first meeting of the Round Table. A letter should be sent to the representatives of management and labour, stating the names of those who are to attend and the place, date and time of the meeting. The letter should be signed by the Acting Chairman of the Round Table who is chosen by management.

Hold the first meeting of the Round Table. At the time and place specified, the Acting Chairman calls the meeting to order and requests nominations for a secretary. With nominations submitted, the Acting Chairman then calls for a vote and announces the result. The Acting Chairman requests the members to draw up a constitution for the Round Table, presenting management's draft as a basis for discussion. When the constitution has been decided upon by the members and discussed with their constituents, it is adopted and the Round Table declared formally organized. The secretary posts copies of the constitution throughout the plant. As soon as the organizational stage is completed, the Acting Chairman calls for nominations from the committee and a permanent chairman is appointed.

GENERAL PROCEDURE

Nominations.—They may be made either by a nominating committee or accepted from the floor only. Nominations should be offered prior to the meeting at which the election takes place.

Period of Tenure of Office.—An equal number of labour and management representatives should be retired each year and no representative should hold office without re-election for longer than three years. The secretary and chairman are retired in alternate years.

The Round Table Constitution.—In phrasing the constitution, the purpose and activities of the Round Table should be clearly stated but not so rigidly defined as to limit its effectiveness. The duties and responsibilities of the officers should also be clearly defined. The procedure for retirement of all members and election of labour members should be stated. A clause guaranteeing the immunity of the labour members with respect to Round Table discussions should be inserted in the constitution. Amendments to the constitution should be made only on the recommendation of the Round Table to management. The method of bringing matters to the attention of the Round Table should be stated. It is usual to have the worker discuss his suggestion with his Round Table representative. The representative places the matter on the agenda and, if necessary, the secretary asks the worker to discuss the

matter with the Round Table. If the foreman does not have authority to settle the matter or if he does not do so to the Round Table's satisfaction, the matter is referred by the personnel director to top management for final decision.

The Chairman and the Secretary.—Practice varies with respect to the choice of chairmen and secretaries. Some plans provide for the appointment of one chairman and one secretary only. In such cases, the chairman is usually a management representative while the secretary is appointed by the labour representatives. Other plans provide for two chairmen and two secretaries, one selected from the labour representatives, the other appointed by management. The chairmen preside at alternate meetings. The secretary chosen by the workers is responsible for the material the workers wish presented at the meeting, the secretary appointed by management for the latter's material and both secretaries are responsible for keeping the minutes.

The secretary is responsible for the minutes and should be able to devote time sufficient for his duties without interfering with his regular work. The minutes show the time the meeting was called to order, the names of those present at the meeting, the name of the chairman, the confirmation of the minutes of the previous meeting, and the business of the meeting and time of adjournment. Copies of minutes should be posted throughout the plant.

How to Conduct a Meeting.—The general procedure for a meeting is indicated below. If a quorum is present, the chairman calls the meeting to order and requests the secretary to read the minutes of the previous meeting. If the minutes are not challenged, the chairman declares the minutes confirmed. The business of regular meetings is considered in the order outlined in the agenda as follows: First: minutes. Second: unfinished business. Third: new business.

Procedure for Adjourning a Meeting.—It is usual for the chairman to request that a motion of adjournment be put. However, any member of the meeting may put the motion for adjournment at any time, the chairman having the right to refuse to accept the motion if he feels that the intention behind the motion is to block new business.

The Quorum.—A quorum is the number of members who must be present at a meeting before business can be transacted. The number and balance of representatives constituting a quorum should be set forth in the constitution.

REFERENCES

For further information and for assistance in organizing a Labour-Management Round Table, apply to the Industrial Production Co-operation Board, Ottawa.

CASE HISTORIES

The following are quoted in "100 Industrialists Report", War Production Drive, W.P.B., Washington, D.C.

The Allen Manufacturing Co., Hartford, Conn. We now have a Central Committee of ten, equally representative of labour and management, which meets once a month to accept and act on reports of sub-committees and to transact any other necessary business.

This endeavour has served here—as with many industrial concerns throughout the land—to bring labour and management together at the conference table and in the committee meeting. These meetings give each part a clear understanding of the other's problems and viewpoints and the result definitely adds up to greater teamwork to win the war.

We plan to continue our War Production Drive as long as the war lasts and possibly, under another name, during peacetime as well.

American Gas Accumulator Co., Elizabeth, N.J. A considerable reduction of lost time, our attendance being improved fifty per cent. Have received a number of material saving suggestions by changes in design, substituting other materials in place of vital ones. Also, our production has been increased by suggestions made on machining methods.

Being one of the smaller plants on production work, we felt that our committee should be made up of enough labour representatives so that every department and operation would be covered. We employ about 300 on production and there are eighteen employees representing labour. Of this number, six meet each week with five representatives of management. We felt that through the work of these committees we could accomplish many things which may have been left undone or overlooked altogether.

We expect to continue with these committees in the operation of our shop after our enemies have surrendered and we are back to peacetime operations.

American Stove Co., St. Louis, Mo. In reviewing the year's activities, the committee has accomplished the following:

1. Safety Drive. Organized a sub-committee whose duty it is to study causes of all accidents, both minor and major. They recommend and place into effect all safety measures, if approved by management. Safety meetings are held weekly. This activity has caused a big improvement in the monthly report figures.

2. Absentee Drive. With the co-operation of the Personnel Office, a study of all absentees was conducted. Each worker who is absent is interviewed by the Personnel Director and then told about the importance of his war job. It was soon learned why so many workers took days off. Among some of the excuses were ration board troubles, calls to the clinic and doctor's office, income tax filing, etc. The Personnel Director has now set up a department to trace down all rationing problems for the workers. The workers now contact the office before they take time off, to determine if the committee can take care of their problems so that they can stay on the job.

3. Share a Ride. The Government plan was adopted and the "Share-a-Ride Club" was organized. Through this group all rationing and problems of gas and tires are solved for the worker.

4. Production Drive. A constant production drive is maintained. Government and other types of posters are used. Production mass meetings are held. Speakers for these occasions are representatives of labour and management. These meetings have proved quite popular and certainly have brought our workers closer together through this special contact.

5. Employee's Magazine. Our publication is printed once each month. This magazine is designed to cover each phase of the committee's activities. It also prints activities around the plant, personal items about the employees and other news of interest to all.

6. Suggestion System. Boxes are located throughout the plant where employees can deposit their suggestions. A constant drive is kept in progress to encourage the workers to send in their suggestions. Posters, bulletin-board messages and magazine articles are constantly asking for their suggestions. Many excellent ideas on safety measures and production have resulted.

7. This committee also launches all drives such as Red Cross, War Chest, Blood Donors, War Bond and Stamps, U.S.O., etc. Each campaign has met with success.

The Coleman Lamp and Stove Co., Wichita, Kan.
From the standpoint of accomplishment I can frankly say that we have been most pleased. Here are a few of the distinctive results:

- (1) Reduction in absenteeism from an average of seven per cent to an average of three per cent.
- (2) An increase in bond purchases through the pay-roll deduction program from forty-seven to ninety-six per cent of the employees.
- (3) A forty per cent increase in the number of suggestions submitted. Many of these suggestions included savings in material and a substantial saving in man hours.
- (4) A fifty per cent reduction in spoilage.
- (5) The creation of "safety-consciousness" on the part of all employees.

APPENDIX H

A CHECK LIST FOR MANAGEMENT SELF-ANALYSIS

On page 16, reference is made to a check list designed to guide management in a self-analysis of its attitude toward its employees. Management is urged to answer the questions frankly and then consult the following page for an analysis of answers:

- | | | |
|--|-----|----|
| 1. The present labour problems are temporary and will disappear with the return of the greater labour supply available in the post-war period..... | Yes | No |
| 2. Government Regulations are the main cause of labour unrest and, with their removal, conditions will return to a normal state. | Yes | No |
| 3. Labour has 'got its head' and the only remedy is discipline. | Yes | No |
| 4. From first-hand knowledge, I know that my employees feel that:
(a) they are each a part of the organization; | Yes | No |

- | | | |
|--|------------|----------|
| (b) the company recognizes that their contribution is of value. | Yes | No |
| 5. Programs to improve employer-employee relations are a temporary measure, useful only in cases of labour shortage. | Yes | No |
| 6. A closer employer-employee association would seriously interfere with the efficient management of the plant..... | Yes | No |
| 7. I have a first-hand knowledge of:
(a) the cause of individual absences...
(b) why employees leave. | Yes
Yes | No
No |
| 8. I believe that improved industrial relations will prove profitable in the long-term operation of my company..... | Yes | No |
| 9. I am willing to take the time necessary to determine the basic causes of loss through absenteeism, labour turnover, 'whistle beating', lateness, low worker productivity, etc. | Yes | No |

The following score sheet lists the answers which are indicative of good management attitude. These answers are based on the opinions of progressive managers in plants where successful Industrial Relations Programs are operating. If the answers given to the questions on the previous page do not correspond with those on the score sheet below, management would be well-advised to re-examine its thinking on those points at which it finds itself at variance with the listed answers.

SCORE SHEET

1.	No	5.	No
2.	No	6.	No
3.	No	7. (a)	Yes
4. (a)	Yes	(b)	Yes
(b)	Yes	8.	Yes
		9.	Yes

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